DOMESTIC ENGINEERING

A Weekly Record of Progress in Plumbing, Heating, Ventilation and all Matters Pertaining to Domestic Sanitation

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Are you wearing a new suit? Have you bought a new car? Probably you didn't actually need them but bought them after being sold on the idea that you **ought** to have them. Are you selling the folks in your town on the idea that they **ought** to have modern plumbing and heating equipment? Intensive sales work inaugurated **now** will keep your shop busy for the rest of the year.

THE SPRING CAMPAIGN.

THIS is the time of the year when the general public starts to dress up, not only itself but also its habitations, and a regular harvest of business results for manufacturers and merchants inaugurating Spring campaigns. It was only three weeks ago that millions of dollars were spent for new hats and new clothes in order that Mr. and Mrs. Brown, the Smith family and the Joneses, in the next block, could go to church or march up the avenue all dolled up. It costs money to parade. Now the paint manufacturer comes along and says: "Clean up, paint up", and keeps urging us, through newspaper and magazine advertising, to give the old house a couple of coats, anyway. The home furnishing house takes a peck at our financial structure and asks if we aren't ready for that wicker furniture we've wanted so long, or that icebox, or that stove. The hardware dealer gets busy and has window displays and uses the daily newspapers to sell garden implements, seeds, etc. Then, the automobile agent starts his Spring Song about the wonders of the country, and aren't we ready for the snappy little chummy roadster, we've often admired in his showroom. The summer resort advertisements are beginning to appear in our daily papers—But—

How often do we see an advertisement telling the public to pay attention to the Inside of the house? If people have money to spend, why isn't it worth while to tell them to remodel their plumbing equipment to make it harmonize with the rest of the house—to install shower baths, automatic gas water heaters, laundry equipment, medicine cabinets, etc.? Is there any reason, too, why they should wait until next Fall before correcting the defects that developed in their heating equipment during the past winter?

Are the folks in your town sold on the fact that a modern bathroom outfit is the finest investment that they can make in improving their homes? Have you impressed on their minds the permanence of such an investment, the real beauty of the built-in bathtub, the pedestal lavatory, and the up-to-date closet combination, their sanitary features and absence of upkeep expense?

Do the housewives in your locality know that you can furnish them with up-to-date laundry tubs and laundry heaters? Are you acquainting them with the fact that they can use showers that strike the shoulders and do not wet their hair? Are you keeping after the men folks and the young fellows, who play golf and baseball, telling them how fine it is to get into the habit of taking a shower every morning and night, and after the game?

Are you going after gas water heater business? Do you realize that three-fourths of the homes in your city—if you use gas—are prospects for such equipment? Do they know the advantages of such hot water service, which can be had at the turn of the faucet, at a comparatively low cost, without the trouble of keeping the equipment clean and in running order?

Are you getting **your** share of business?

Are your mailing lists up-to-date? Are you advertising, changing your window displays frequently to invite trade, sending out circulars regularly? Are you making a special effort to dispose of old stock that may be cluttering up the shop, the sale of which will furnish money to buy new and more modern equipment? Intensive sales work brings results.

Are you getting the farmer's business? Are you considering the agency for a reliable lighting outfit, that will pave the way to much business in plumbing, water supply and the sale of specialties? The farmer's going to get $2.26 for every bushel of wheat that he produces this year. What are **you** going to get?

Are the factories, the office buildings, the stores in your locality using sufficient and modern plumbing to serve the needs of their workers? Are the factories equipped with ventilating equipment that promotes health and comfort, and with bubbling fountains and shower baths.

If you have not gone after such business, get busy **now.** Trade Extension means new business from old buildings. Don't wait for business—go after it!

How *to* Build Business *in* Farm Lighting Equipment

Exceptional Opportunities in Every Rural Community—Field Is Practically Untouched—Profitable Specialty Business Follows Every Sale—NOW Is the Time to Get Started

By The Optimist

"SELLING private electric lighting outfits to farmers is going to be a big part of my business, and I'm going to start in right now to develop it." This was the forceful expression of one master plumber, whose attention was called to the exceptional possibilities in this field, and his viewpoint has been endorsed by many of his fellow-craftsmen in all parts of the country.

Since the appearance of the first article in this publication on the sale of such equipment by plumbing and heating contractors, many pertinent inquiries have been sent in. These questions have covered such points as:

"What type of plant do you recommend for a small farm, where current may only be utilized for household requirements?"

"Is it possible to obtain a unit that will serve not only the house, but also the buildings scattered all over the farm, and also run light machinery?"

"What is the extent of the specialty business that follows the sale of a lighting installation?"

"Please advise the best way to go about handling this euipment such as selling arguments, advertising, etc."

In order to answer all of these questions as thoroughly as possible, additional data has been secured by "Domestic Engineering." This further investigation has proved conclusively that the field is practically unscratched and is certainly within the immediate province of the plumbing and heating contractor, and one that no live dealer is going to overlook.

The private electric lighting outfits available and especially adapted for use on the farm are fundamentally the same, consisting of an engine, generator, and storage battery, and in selecting the most desirable outfit to handle, the master plumber will have to use the same excellent judgment as he did when buying water supply equipment.

Whatever make is decided on, it is advisable in selling to take into consideration not only the farmer's present requirements, but also to figure on the probability of expansion. A small lighting outfit will do a limited amount of work, and do it well, if not abused by overloads, and its capacity is restricted in the use of electrical conveniences and labor-saving devices. The large plant—able to do big work—has its field, but would be out of place in a small home where the requirements are simply for lighting and domestic appliances. There is the right capacity for each installation, but it is well to bear in mind that an outfit with some reserve is often advisable.

The important need of selling a plant too big rather than too small is that repair bills are reduced to the minimum and there is little chance of its being overloaded. Remember that the sale on electrical specialties will bring substantial profits from every customer who is satisfied with his purchase, and has little or no trouble in operating it.

The current needed by the usual electrical devices is perfectly definite and is given in the following table of power requirements, together with the approximate costs per hour of operation, based on using 25 cent gasoline to generate the electricity.

Letter to Farmer.

Mr. James A. Compton,
R. F. D. No. 3, Weston.

Dear Sir:—Knowing you as a progressive farmer and one who is constantly striving to increase production and at the same time run your farm economically and efficiently, it is a pleasure to inform you that I have taken on the agency for the Blank private electric lighting system.

I know you will be interested in it, because it brings to you all of the home conveniences in the way of light, etc., that are enjoyed by folks living in the city.

An electric lighting system not only provides light for the house and all farm buildings, but also furnishes power to run labor-saving devices, such as washing machine, vacuum cleaner, electric iron, etc., as well as such light farm machinery as the feed grinder, cream separator, milking machine, water pump, etc.

You and your wife are cordially invited to visit our showroom—206 Main Street, where we have a working model in actual operation. You are at liberty to operate it at will and ask all the questions you want to, without feeling under the slightest obligation to buy one right now.

Be sure and pay us a visit and see the advantages of electricity.

Showroom open every evening till nine o'clock

Very truly,
Peoples Plumbing Company,
James A. Brown, Manager.

ELECTRICITY ON THE FARM
BUILDS BUSINESS
LIGHT
RUNNING WATER
SANITATION
LABOR SAVING DEVICES

	Watts	Equal to	Cost per cents hour
50-candle power lamps	40	2 lights	¼
Water pump, 1/6 horsepower	200	10 lights	1¼
Water pump, ½ horsepower	600	30 lights	3¾
Air pump, ½ horsepower	600	30 lights	3¾
Cream separator, 1/6 horsepower	200	10 lights	1¼
Churn, 1/6 horsepower	200	10 lights	1¼
Electric water heater	350	18 lights	2½
Electric grill	500	25 lights	3
Electric stove	600	30 lights	3¾
Vacuum cleaner	160	8 lights	1
Washing machine	200	10 lights	1¼
Flat iron	600	30 lights	3¾
Electric toaster	525	26 lights	3½
Fireless cooker	600	30 lights	3¾
Electric fan	75	4 lights	½
Warming pad	75	75 lights	½

An electric lighting outfit is of great benefit to the farmer in running the farm and more particularly to his wife, because it gives her the opportunity to eliminate household drudgery. Not only does the equipment provide light for the house and in all of the farm buildings, but also furnishes power to run an electric washing machine, vacuum cleaner, electric iron, electric fan, sewing machine, churn, cream separator, feed grinder, horse clipper, milking machines and numerous other devices. So, in approaching the prospective buyer, it is very important to cultivate his wife's acquaintance and point out how she may benefit from its use.

There is no question that the farmer's wife needs household labor-saving devices, even more than the city housewife. In the first place, the farmer's wife has even greater difficulties with the servant problem than her city cousin. The farmer cannot secure the utmost of production, however, unless he uses modern machinery, and he will need additional labor to harvest the enormous crops expected. Additional labor on the farm means extra work for the farmer's wife. Should she, alone, be expected to carry the increased burden of the kitchen and home and spend her days over the old-fashioned, obsolete wash tub, and her nights over the old-fashioned ironing board? Should she break her back and ruin not only her health but endanger that of the next generation by working over a washboard, or will she save her time, her money and her health by using those facilities which her husband can pay for and would, in most cases, be glad to buy for her if shown the reasons why?

Farming in this country is daily becoming more and more of a science. Successful farming demands the latest equipment, and if the same thought and attention which has been applied to farming and farm methods were applied to the daily household tasks, it would revolutionize the work of the farmer's wife.

The plumbing and heating contractor is the most logical man to handle lighting equipment for many reasons. First, because he is permanently established in business, the farmer knows him and can depend on his service. Second, no other shop in town is capable of serving the farmer's domestic requirements mechanically—plumbing, heating, water supply. Third, by reason of his mechanical training, the plumber can readily master the fundamental principles of electric lighting and thereby not only make himself of greater value to his community, but also builds up a more profitable business for himself.

Cash in on your reputation is the advice of Henry Elston, a Muscoda, Wis., master plumber, who sold and installed private water supply and lighting systems long before either of these appliances were manufactured as complete units. In his opinion, the big thing in advertising the private lighting system to the farmer is to bring to his attention the dependability of the dealer he knows and is in direct contact with. Mr. Elston says:

"All the farm lighting plants I put in up to last year were assembled parts, fitted up to suit the conditions as

Iron the Clothes and Sprinkle the Lawn By Electricity

WE have an electric lighting outfit that will do this, and more—make work a pleasure instead of continuous drudgery. It will eliminate many of the inconveniences to be found on many farms and give you all the comforts of a city home.

Perhaps you have thought of having electricity on your farm but have considered the equipment too costly and too complicated to meddle with. The outfit we have is very simple and practically takes care of itself.

Electric Light and Running Water

You not only get good lighting in your home and barns, but also the power to run an electric pump which will provide running water everywhere you want it; will also operate light farm machinery and such conveniences as the vacuum cleaner, washing machine and electric iron.

We have one of these lighting outfits operating in our showroom. Will you call on us and see it work? You are privileged to run it yourself and ask all the questions you want to without feeling under any obligation to buy.

The next time you are in town be sure and pay us a visit—It will be worth your while to make a special trip. Showroom open till 9 p. m. for your convenience.

Peoples Plumbing Co.

206 Main Street

Subscribers can obtain matrices of this adv. from "Domestic Engineering" for 25 cents each, or electrotypes at cost.

I saw them. They gave such good service that I was a long time being convinced that the complete units now being offered by manufacturers were worth handling. However, when I was convinced I pushed them for all I was worth, and even recommended them to replace the assembled units I had installed, as being more efficient and more economical. I first tried out three makes on my own farm to determine which had the most merit. I finally selected one, studied it carefully and became an expert on this particular make. Now I can almost tell a farmer over the telephone what is wrong if he can describe the trouble fairly accurately. When I send a man out to make repairs I always charge the customers for my service. He does not expect to get it done for nothing, nor do I feel that it should be expected. Some dealers have asked me if I did not feel obligated to make repairs, because I installed the unit. Not at all, any more than I should replace at my own expense any plumbing or heating equipment that had gone wrong through no fault of mine. It always pays to do good work, and I have an assembled unit on the farm of John Swingle, near here, that has been operating continuously for 12 years."

The master plumber should not regard electrical work as beyond his scope of operations and as something he cannot handle successfully. A great many have been doing it for years, and an increasing number are starting to master the principles of electric wiring, just as they learned the basic essentials of sanitary plumbing and all kinds of heating.

European conditions are in a deplorable state, and the United States will be depended on to a considerable extent to feed these nations until they are satisfactorily adjusted. This means that the American farmer will continue to have a big foreign market, and prices for this year anyway, will be high, due to the Government guarantee of $2.26 per bushel for wheat.

The farmer is prosperous, is saving money and is a good business prospect, not only for lighting equipment and allied specialties but also everything handled by the progressive master plumber. He and his wife need these utilities and home comforts and can afford them. Their use will also increase production, attract and retain labor, and make the farm more liveable for the young folks as they grow into maturity.

When approaching the farmer, bear in mind that he is used to thinking in big figures. He does not think of a 1,000 bushels of wheat as such but as $2,260. His automobile probably cost him anywhere from $1,500 up, and he thought in hundreds of dollars when considering the purchase of his tractor, his auto truck or his threshing machine. So that there's no excuse to get weak-kneed when selling a lighting system. Don't recommend an outfit that is too small for his requirements, simply because you think that he won't be able to stand the price. Sell him right or leave him alone—your reputation is worth too much to unload an outfit that is going to be unsatisfactory and cause you and him a lot of trouble. An experience like this will kill your chances in your farming community—so play safe by selling him an installation that you will be proud to stand back of.

If you have made up your mind to handle this equipment, resolve, first of all, to go about it systematically and eliminate a splurge. Instead of trying to land everybody the first week, sit down and prepare a list of the most prosperous farmers you have done business with and others whom you know, who are the most likely prospects for electric lighting. Send them a letter along the lines of that reproduced herewith. Do your best to get the farmer and his wife to come into town to see you and your display. You will find it immensely valuable to have a working model in actual operation in your shop. Let the folks fuss around with it themselves—push the button and put on the lights. You can go further by having a washing machine and a vacuum cleaner hooked up for practical demonstrations. Make your newspaper advertising worth reading, along the lines of the suggestions reproduced herewith.

"Domestic Engineering" will gladly furnish this series

Play Cards by Electric Light

YOU can thump the table as hard as you like, when the game gets exciting, without any fear of fire, such as would happen with the old-fashioned oil lamp.

Running water in the kitchen, too, and everywhere else where running water is needed.

These conveniences are provided by the Blank Electric Lighting System, for which we are the agents. No farm need be without the conveniences of electric power no matter how isolated it may be.

City Conveniences for Every Farm

The private farm lighting system places in the hands of everyone a ready and reliable means of generating current right on the farm.

It will run an electric pump, supply current for the house and barns, will run light farm machinery and labor-saving equipment in the home, such as a washing machine, vacuum cleaner, electric iron, etc.

This outfit can be installed in the cellar. Is inexpensive, clean, easily taken care of and economical.

Call and see our showroom, where we have a model in actual operation. Work it yourself and see how simple and valuable it is. Don't feel obligated to buy if you give us a call.

Peoples Plumbing Co.

206 Main Street

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of advertising cuts to subscribers, at cost, upon request.

"Domestic Engineering" wants to see you expand your business—to help you in every way possible, and has every confidence in your ability to make good.

Let's Go!

A Vision of Bygone Days

THOSE days of antiquated methods—the hand pump, the oil lamp, insanitary plumbing—all are gone.

Now, within the reach of every farmer, are up-to-date facilities that will provide running water in the bathroom, the kitchen and around the farm; electric light all over the house, in the barns.

What a big change—and yet it has been brought about in a very simple way by the

Blank Farm Lighting System

We have an outfit exactly suited to your needs—one that will eliminate drudgery and give greater comfort to everyone. It will help you do everything quicker and cleaner and for a low operating cost.

You can satisfy yourself how simple this system is by calling on us, and see the model in our showroom. We will gladly explain to you that it will operate an electric pump for running water—run your light farm machinery, and those things which every woman loves—the electric iron, washing machine, vacuum cleaner, etc.

Bring your wife with you—she will enjoy hearing about the conveniences this outfit provides. Operate it at will.

Showroom open every night till 9 p. m. for your convenience.

Peoples Plumbing Co.

206 Main Street

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TOLEDO NEWSPAPER BOOSTS BETTER PLUMBING AND HEATING.

By Lake Erie.

A recent issue of the Toledo (Ohio) "News-Bee" contained an editorial entitled "If You Are Going To Build Your Own Home," which will be of interest to readers of "Domestic Engineering," and is passed on with the suggestion that master plumbers and fitters in other cities try to get their local papers interested in the subject of better plumbing and heating. This could be done with profit to the industry. It could be done either by individuals or by the local association. Weekly chats on sanitary plumbing could be prepared, covering the home, the factory, the store and the office building. It would get people thinking more and more about the value of modern equipment. That is important, and will bring business. Such an editorial campaign will cost nothing, except some effort on the part of those interested. It has been done in some quarters with profit. It should be done elsewhere. Here is a copy of the editorial:

If You Are Going To Build Your Own Home.

A great American architect was in the habit of using this expression to his clients and students: "The inharmonious distribution of expenditure!"

When asked for his meaning, he explained that he once stopped in a hotel with a white marble "grand" stairway, the posts and ballusters of which were elaborately carved. At one side of this stairway was the cheapest type of passenger elevator that most of the time did not run by reason of its being out of order.

The architect went on to explain that it would have been a more harmonious distribution of expenditure to have spent less on elaborate marble carving and more on the elevator.

There is going to be a lot of home building within the next few years, and this principle of the inharmonious distribution of expenditure will apply to the frame dwelling quite as well as to the commercial structure.

In our home building of the past we have sacrificed much in the way of comfort and convenience for mere bigness and useless elaboration.

But we are learning, for instance, that a chicken will cook just as well with the kitchen table or sink along side and next to the range rather than on the other side of a 16-foot room.

The modern kitchen is small, very much in the nature of a laboratory, and is being designed to save steps and motions as in the case of the modern factory.

We are learning that it is better to expend the cost of towers, dormers, elaborate gable fronts and beveled glass windows in more and better plumbing, heating and the general utilities of a dwelling, that it is the more harmonious distribution of expenditure.

Share of Partner.

Nothing is to be considered as the share of a partner but his proportionate part of the residue or balance after an account has been taken of the debts and credits, including the amounts paid by the several partners in liquidating firm debts. A partner who pays or is forced to pay more than his proportionate share of firm debts has a right to a general accounting and contribution from the assets of the firm or from his co-partners.—Court of Civil Appeals of Texas in Diamond vs. Gust, et al., 260 Southwestern Reporter, 366.

Buy U. S. War Savings Stamps!

THEATRE VENTILATION *from a* HEALTH *and* BUSINESS STANDPOINT

Mechanical Equipment Is Necessary and Its Installation Is Profitable to Contractor and Owner

By E. Vernon Hill,
Chief of Sanitary Bureau, Including Division of Heating and Ventilating, Chicago

Editor's Note: Those who are studying the necessity of adequate mechanical ventilation in all classes of buildings, with a view to applying that knowledge to the development of business, may well profit by the following article. It is based on years of practical experience and actual accomplishment. Chicago now ranks as the first city in the country respecting requirements for ventilation in theatres. What is good for the people of Chicago is equally desirable for other cities, both large and small. There is a big opportunity for progressive heating contractors to build business by making a study of local conditions and bringing to the attention of those in authority the commercial and other advantages of mechanical ventilation.

THE question of mechanical vs. natural ventilation is one that is up for discussion at frequent intervals. The subject is improperly presented in this form, as there should be no question of this kind. There are some office buildings, for example, where the space per occupant exceeds 1,000 cu. ft.; where the window area exceeds 12 per cent of the floor area, and where the offices are so located that the windows can be used for ventilating purposes that do not require mechanical ventilation, and where satisfactory results can be obtained by the use of the windows. The same is true of some factories, where space and window provisions are adequate and where the manufacturing process does not contaminate the air, where natural ventilation is entirely satisfactory. There are other types of buildings, however, where it is a practical impossibility to properly ventilate them without a mechanical equipment. Theatres, both the so-called legitimate houses and those exhibiting moving pictures, are typical illustrations of this class of building. Windows are of no value, for as the lighting effects must all be produced artificially the occupants do not desire a view of the exterior. If they are open they are a source of noise, which is highly objectionable, and they materially increase the fire hazard. Windows should be prohibited by law in theatre buildings and mechanical ventilation required in every instance.

There should be no question as to whether natural or mechanical ventilation is the better, only WHERE is the latter required.

This is the first point that should be clearly understood. If mechanical ventilation is desirable in any type of building, it is in the theatre. It is necessary not only for the health, comfort and safety of the theatre patrons, but it is also highly desirable from a business standpoint. The necessity for mechanical ventilation from a health standpoint is quite universally recognized. Its value from a business standpoint is not so well understood. It might not be out of place to recount briefly the development of theatre ventilation in Chicago since the passage of the so-called compulsory ventilation ordinance in December, 1910, as it has a direct bearing on these points. It was at this time that the moving picture business was growing so rapidly. Small theatres were springing up over night. They were located in stores, sometimes in abandoned buildings of various kinds, and many were constructed often in the cheapest manner. The sanitary conditions were bad. No consideration was given to ventilation or other matters of sanitation or to proper fire prevention or safety. The municipal authorities, being brought to the realization of this situation, drafted the ordinance which was passed by the City Council in December, 1910, which fixed the present building regulations as to safety, space per occupant, fire prevention, etc., and the requirements as to heating and ventilation. This ordinance was

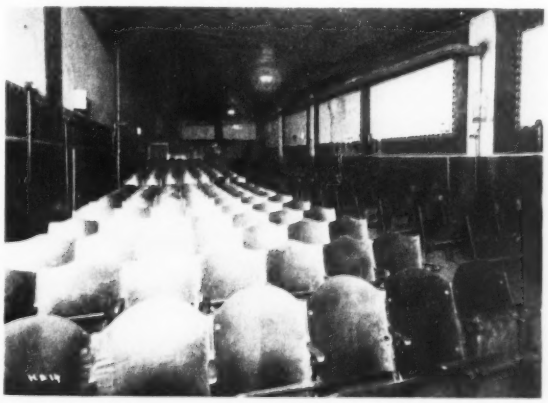

Fig. 1. An Old-Time Moving Picture Theater Without Mechanical Equipment but Having "Deodorizers" Hung on the Walls.

made effective in January, 1911, but, owing to no appropriation having been made by the City Council for a force of engineers and inspectors to carry on the work, actual municipal supervision and control were not instituted until June, 1912.

Previous to 1911 there were over 500 theatres in the city, many of them in the worst condition imaginable, from the standpoint of sanitation. A large portion was heated and ventilated by furnaces located in the basement, and the condition of these basements was extremely bad. Other theatres were heated by stoves. In the latter cases

no provisions, whatever, were made for ventilation, the auditorium was in effect a tight box, and the air conditions in the same became intolerable. The odors frequently were so bad that the patrons were sometimes forced to leave. To correct this condition the managers of these theatres were accustomed frequently to install deodorizing appliances such as are commonly seen in water closet compartments.

Upon the passage of the ordinance requiring, mechanical ventilation for theatres, but before the organization of the Ventilation Division of the Chicago Health Department, a marked change was noted in the ventilating equipments in small theatres between January, 1911, and June, 1912. Contractors, specialty men, inventors and cranks of every description impressed the theatre owners with the fact that a law was on the statute books requiring a mechanical ventilating equipment, and proceeded straightway to sell them such an equipment. Extravagant claims were made for these various inventions and devices, most of which were utterly worthless.

Fig. 2. A Freak Ventilating System, Introducing Air Through Pipes Suspended From Ceiling and Having Perforated Spheres at Ends.

After the organization of the Ventilation Division, engineering knowledge and experience were brought to bear on the situation. It was required that plans for all proposed ventilating system must first be submitted to the division for examination and approval, and some latitude was allowed the plan examiner, not only in requiring strict compliance with the ordinance but as to the efficiency and successful operation of the whole system. Marked improvements in the situation were the immediate result An improved system for the small theatres now appeared, which consisted of a centrifugal fan, heaters and ducts of adequate capacity, and a method of introduction through the side walls about 6 ft. above the flood. The heaters were of adequate capacity to warm the air in zero weather; the amount handled was in excess of 25 ft. per person per minute, and the air movement throughout the auditorium was very satisfactory. This method became quite common and gave satisfaction in all cases, if the temperature of the incoming air was properly controlled.

From this time on the situation was only one of development. The theatre buildings showed marked improvement in design and the ventilating equipment showed constant betterment. Later the small theatres, with a capacity of 300 seats or less, that had been so numerous in previous years, began to be superceded by buildings of greater capacity, seating 500 and 600 people. This line of development has continued until at the present time no one would think of building a small picture theatre in a city like Chicago, and even the 1,000 seat houses are now considered poor investments, and the tendency is to build with a seating capacity exceeding 2,000. Many of these large picture houses in the last few years are fine examples not only of modern architecture and models of comfort and convenience, but set a high standard of artistic achievement in the interior arrangements and decorations. The subject of ventilation is now given careful study, and the owners go far in excess of the modest requirements of the ordinance in securing for their patrons a clean and abundant air supply, comfortable temperatures, and, in many instances, proper humidification and humidity control.

The work of securing compliance with the ordinance, as it affects the ventilation of theatres in Chicago since 1912, has been largely a matter of education, and we must, in fairness, admit that the education has not been a one-sided affair. We as well as the theatre owners have learned many things, that we did not know at the beginning, and some of them may be tabulated briefly as principles that will aid others in designing successful ventilating equipments for theatre buildings.

Selection of Equipment.

First: Do not make the mistake of selecting a small equipment. The capacity should be based on an air supply of not less than 25 cu. ft. per person per minute and, if finances are adequate, this should be increased to 30 cu. ft. The fan and heaters should be selected, and the duct work designed on generous lines so that the system only under extreme conditions will be required to operate at the maximum capacity. If this is done, power consumption is reduced, noise from the operation of the fan, or from the flow of air through the ducts, can be eliminated, and in warm weather a marked cooling effect often be obtained by operating the equipment at its maximum capacity. This will prove a boon to the owner, particularly if his competitors are not so equipped.

Method of Introduction.

Second: Do not use the floor introduction method unless an expensive system is contemplated, with a large plenum space underneath the floor and with accurate temperature control. Theoretically the floor introduction method is ideal, but from observations of its practical application we find that it is very difficult to operate with satisfaction. At a velocity not exceeding 100 ft. per minute through a floor register, and at a temperature of not less than 70 degrees, no complaint is made, but if the velocity is increased or if the temperature falls much below this point, a cold draft on the extremities of the

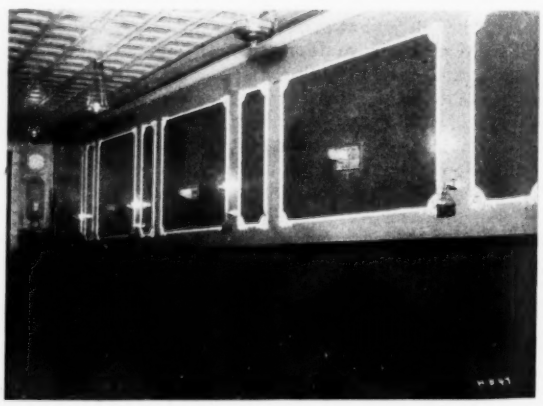

Fig. 3. An Up-to-Date Moving Picture Theater, Showing Sidewall Introduction of Air.

seated occupants causes an immediate objection. A very low velocity and accurate temperature control are necessary for the successful operation of this method. Unless accurate control of these factors is assured, the method is liable to cause serious complaint.

The general and most satisfactory method is to introduce the air through the side walls, particularly at the front, the stage or screen end of the theater. In an ordinary auditorium seating less than 1,000 persons, at least 75 per cent of the total air supply can be introduced through large wall registers at the front of the theatre, the balance through the side walls. This will insure the air movement backward, that is, in the faces of the occupants. This feature is important. A perceptible air motion in the face is pleasant; a very slight air motion in the reverse direction, that is on the backs of the heads of the patrons, will cause immediate complaint. The major portion, in some instances all, of the air should be introduced at the front, and it should be removed or allowed to escape at the rear. This method not only is much more pleasant to the occupants of the theatre, but it improves materially the acoustic properties of the auditorium. The reverse, however, namely, an air motion toward the front, interferes with the acoustics to a considerable degree.

Air Velocities.

Third: The desirable velocity for floor registers has been already mentioned. For side wall registers the following velocities have been found satisfactory.

Side Wall Registers:

Registers 6 ft. above the floor, 300 ft. per minute.
Registers 7 ft. above the floor, 400 ft. per minute.
Registers 8 ft. above the floor, 500 ft. per minute.
Registers 9 ft. above the floor, 600 to 900 ft. per minute.

In some instances it is convenient to introduce the air through the ceiling. This is not the best practice but is allowable under certain conditions. The following velocities are satisfactory:

Ceiling:

7 ft. above the floor, 150 ft. velocity.
8 ft. above the floor, 200 ft. velocity.
9 ft. above the floor, 300 ft. velocity.
10 ft. above the floor, 350 ft. velocity.
12 to 15 ft. above the floor, 400 ft. velocity

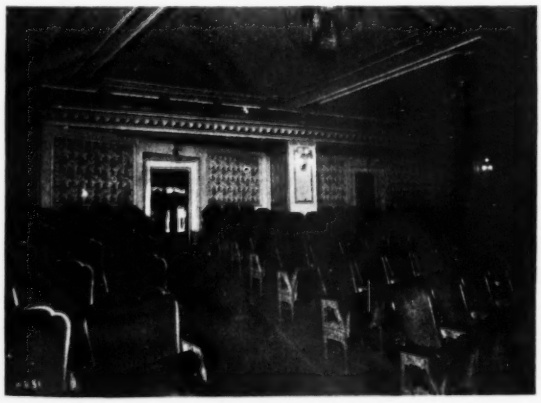

Fig. 4. A Modern Theater Where Air Is Introduced Beneath the Seats.

No supply registers in the ceiling should be allowed where the ceiling height is over 15 ft., except in certain cases where a mechanical exhaust at the floor line is installed.

Accessibility of All Parts of the Equipment.

The intake, the heaters and the interior of all duct work should be easily accessible at every point. This matter is frequently overlooked and often occasions serious trouble. No ventilating system is satisfactory if it cannot be inspected and thoroughly cleaned at frequent intervals. Accumulations of dust and dirt in the ducts or other part of the equipment occasion serious nuisance and often give rise to objectionable odors, rendering the operation of the equipment very unsatisfactory.

Accessories.

Many persons are led to believe that automatic temperature control, humidity control, air washers or other

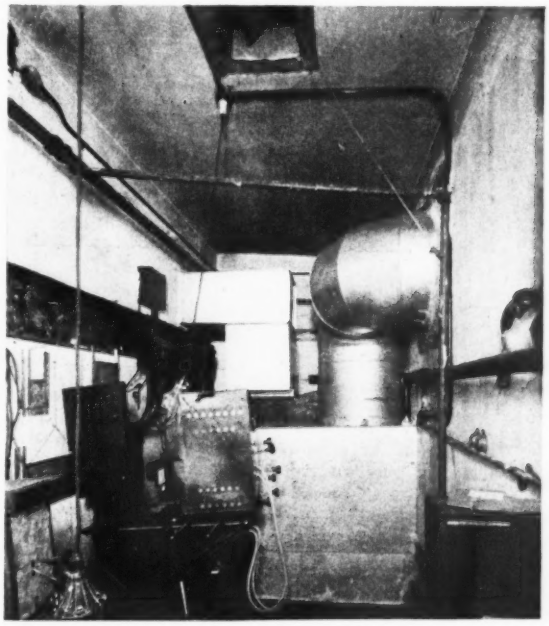

Fig. 5. A Poor Installation, Showing Large Intake Duct to the Right Leading to Enclosed Coils; the Top of Fan Housing Is Shown Back of Coils and the Outlet of Fan and Right Angle Delivery at Rear and to the Left. Motor Not Visible Because of Motion Picture Machine in Foreground.

air cleansing devices are refinements in a ventilating system and required only in special cases. These things should not be considered as accessories but as essential parts of every system. It is only in exceptional cases that they should be omitted. An air washer is not only a device for cleansing the air,, it is highly desirable for humidification in the winter, and it is often useful in reducing the temperature in warm weather. Thermastatic control should be installed with every air washer, if the best results are to be obtained. If these principles are observed in designing the ventilating system, if care is exercised in its installation and ordinary judgment in its operation, satisfactory results can be assured.

Thus far we have discussed the subject of theatre ventilation as a necessity from the standpoint of health and comfort. The other side of the question, namely, the desirability of a good system, from a business standpoint, has not received the consideration that its importance deserves. The history of theatre ventilation in Chicago illustrates this situation.

During the early days of the enforcement of the ordinance considerable opposition was encountered. The expense of installing adequate mechanical devices in theatres was considerable, in many instances it was a serious hardship on the owner. This was particularly true in old buildings where many difficulties were encountered, where space conditions were inadequate, and where the expense was out of all proportion, in the minds of the

(Continued on Page 270.)

SOMETHING ABOUT BACK-VENTING PLUMBING FIXTURES *in* LARGE TOILET ROOMS

How to Lay Out the Piping in Accordance With Full Ventilation and Separate Back-Venting of Each Fixture Trap

By Robert J. Gordon

IF the reader followed me in the article, appearing on page 50 of the April 12, 1919, issue of "Domestic Engineering," he would see the position the writer takes in simplified plumbing, as it relates to a large toilet room in an industrial building where all piping is exposed to view.

In that article I assumed that the architect calls in a master plumber, or sanitary engineer, hands him a blue print, which shows the dimensions of a toilet room and where the fixtures must be set. No piping is shown on the plan, however, and the architect asks the plumber or engineer to lay out a system of piping that will be perfectly sanitary and in harmony with the building.

If you read that article you will perhaps remember that the toilet room in sketch handed to the plumber by the architect is composed of two apartments.

One apartment is 14 ft. by 25 ft. and is entered direct from corridor through double swinging doors. As you enter, you find four shoe shining chairs at the right, and a slop sink behind the door at the left. In front of you is a row of five lavatories against a partition. At each end of this row of lavatories is a pedestal drinking fountain, and beyond each drinking fountain is a swinging door in the aforesaid partition. These doors lead to another apartment at the other side of the partition. This latter apartment is to contain eight urinals and ten closet stalls. The urinals back up against the lavatory partition, and the closets are set against the wall opposite to, but parallel with, the said partition.

Now you have the architect's general requirements in a nutshell, and we may add—the building is five stories high and each floor is to have a toilet room exactly the same as that now described.

In the aforesaid article, the writer purposely arranged the plumbing so as to eliminate as many vents as possible. In other words, he laid out an economical arrangement and one adapted to the elimination of vents. And he assumed that the plumbing was preferred on face of walls, it being an industrial building. Now, however, we will assume exactly the same toilet rooms and the same locations of fixtures, but we will lay out a new system of piping on the supposition that the walls will all be tiled, the floors tiled, and a false ceiling will be hung in toilet room of each floor giving pipe space there. We also will assume that there is no chance of getting risers in the walls. All risers must run in a pipe shaft to be provided for that purpose. Now we require something entirely different from the industrial building lay-out, yet the number and location of fixtures in all toilet rooms will be exactly the same. Suppose that the architect prefers to have the pipe shaft located between the row of urinals and row of lavatories, which is a logical place to have it. Then a plan view of the toilet room would be similar to Fig. 1. In this case, of course, the pipe shaft would be run up plumb from floor to ceiling. It will not stop say 6 or 7 ft. above each floor, as in the

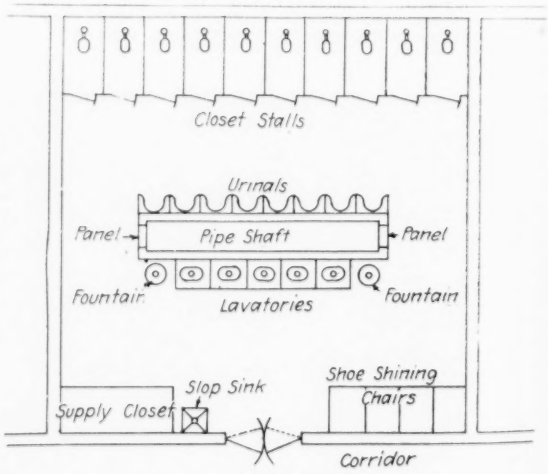

Fig. 1.

case of the partition at back of urinals in the industrial job. It must be run as an open shaft the full height of building, in order to obtain the desired effect. As men must work in this shaft, it should be at least 2 ft. wide inside. This will give them a chance to work the tools. Any iron floor beams necessary to carry the floor will of course be run across the shaft and will come in handy to work from. They also will be convenient for the support of the piping, particularly the stacks.

In order to obtain access to pipes in shaft, it is a good plan to have a removable panel screwed in at each end

wall of shaft, and piping in shaft should be arranged for mechanic's freedom. The shaft will open into space above hanging ceiling at each floor, and all horizontal soil and waste lines will be hung from steel beams or hangers dropped down through the fireproof flooring.

All necessary clean-outs should be placed on the soil and waste lines so that pipes above ceiling, in shaft, etc., may be easily accessible in case of chokage.

There are different ways of laying out the piping for such a job. No designer has a complete monopoly of the best ways of laying out piping. Therefore, although the writer shows his arrangement here, he does not wish to infer that it is the best or only way to do it. He does, however, believe that it is a thoroughly sanitary and sensible way of arranging the piping to meet the present requirements.

Fig. 2 shows in plan view how the piping at ceiling may be laid out. The soil stack is run up at one end of pipe shaft substantially as shown. The vent stack runs up at the opposite end of shaft. All waste, water and vent piping run up in shaft, or in false ceiling space. A 6-inch branch is taken off soil stack with a Y branch located under each floor. This shoots over an angle of 45 degrees, then is run parallel with side wall, then turns at outer wall and runs full 6-inch under five closets and 5-inch under the other five closets. The upper end of this line, at right hand end closet, terminates with a 5-inch by 4-inch tee looking up on an angle of 45 degrees. The end hub of this fitting is provided with a brass screw cap clean-out. The branch is run over with 4-inch pipe to the pipe shaft as a continuous vent. It rises a few feet in shaft, say, 1 ft. above the closets, then joins into the vent stack, which may be 5 or 6-inch pipe. All the horizontal soil piping for the closets is inside of false ceiling. It should have a pitch of 1 in 50 or more down toward soil stacks.

The 4-inch vent line in false ceiling may run close up to the floor beams and may be level so as to gain fall on that portion of the piping, which carries the sewage proper.

Studying this horizontal soil pipe work, you will observe that the piping scheme is really a continuous loop from soil stack to vent stack. The closet outlets just drop down into the loop with very short branches. These branches will be less than thirty inches from floor flange to the main circuit line. As this is less than 1 to 10 the writer considers that the ventilation of these short branches will be reasonably pure and satisfactory. By 1 to 10 is meant that an unventilated branch shorter than ten times its diameter should be well ventilated by diffusion. That is not a radical rule at all. It is not even a rule uniformly recognized by the trade. It is just a simple easily remembered rule that the writer thinks should be quite satisfactory in work where individual back-venting is not required by law. It will work fine, as regards physical operation of the closets, and will ensure a reasonable degree of air purity in the outlets from closets, providing a good circulation of fresh air is maintained in the stacks and in the loops.

The 3-inch branch from soil stack which takes in the eight urinals branches out of a 3-inch hub or tapping at side of the 6-inch Y for closet branch loop. It crosses the pipe shaft, runs into false ceiling space, runs under the urinals taking in the urinal traps with short Y connections, terminates at its upper end with a 3-inch brass screw clean-out plug, screwed into end of a 3x2-inch T looking up.

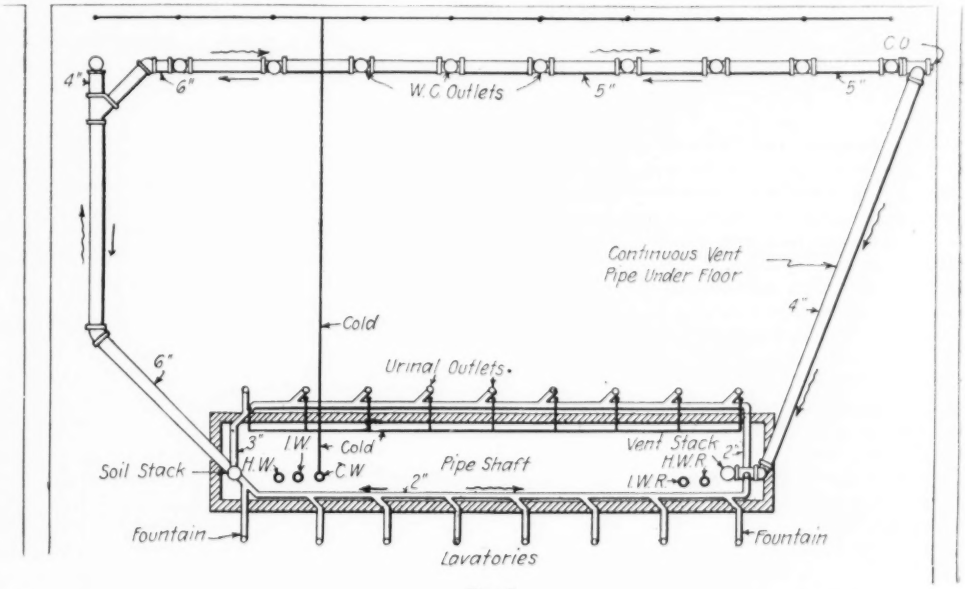

Fig. 2.

This tee connects to a 2-inch continuous vent, which runs across shaft, rises, say 1 foot above floor level and enters side of vent stack substantially as shown.

Thus we create a loop for the urinals similar in every respect to the loop for the water closets. In connecting up the traps to this loop, however, it is necessary to have the distance from loop to trap seal not more than 20 inches, if the connection is 2-inch, or 30 inches, if the connection is 3-inch pipe, that is if we wish to work on the 1 to 10 limit.

It is also necessary to have the trap connections made to loop pipe so that no siphonage will take place, and yet in such a way that back pressure will not force the trap seals inwardly. For example the traps must not be connected to the loop pipe as in Fig. 3. There we have a bad condition. This trap can easily be siphoned out, and if the seal A is lost by siphonage, there is

nothing to prevent drain air or sewer gas from entering the building through this unsealed trap. It is quite evident that a perfect siphon is formed here. The short leg of siphon is the outlet leg A of trap. The long leg of siphon is the vertical branch waste pipe B. This is much longer than A. Therefore, if pipe B becomes filled

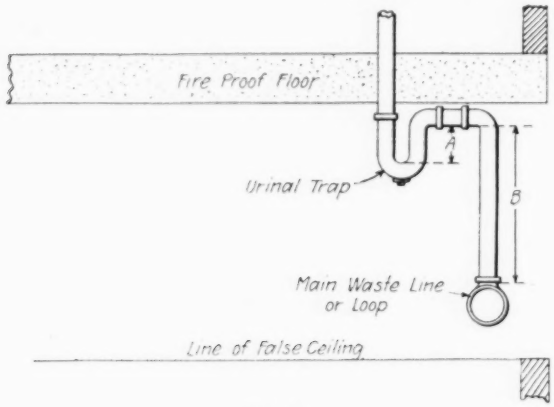

Fig. 3.

with water during discharge of the fixture, or by a janitor pouring a pail full of water down this fixture, the weight of water in leg B will overbalance the weight of water in leg A. The water in trap will therefore be siphoned down through B. To prevent such a trouble and yet employ the desirable plan of continuous venting, it is necessary to make the connection so as to avoid a pulling power in the outlet leg. Fig. 4 shows how it may be done. The trap is lowered so as to be practically on a level with the main loop line. Then the siphoning force is eliminated. This trap cannot be siphoned by any effect of any flow in the fixture branch itself.

To prove this assertion examine the levels as depicted by dotted lines. The height A represents the seal of the trap. The height B represents the height of outlet leg of trap. Note that the top dotted line from A to B is level. That is the normal water line of trap when the seal is perfect.

Now note the bottom dotted line at B. This is level with top of inlet to Y fitting on the loop line. It is really the level, at which air in loop may enter the branch waste. It is equivalent to the bottom of the long leg of the siphon in Fig. 3, and designates the bottom of this siphon's outlet leg. Now follow that dotted line from B toward the left, and note that it is higher than the lip of trap, which constitutes the seal. This is evidence that outlet leg of trap is not as long from a siphonic standpoint as the inlet leg. Therefore, it is impossible for the trap to be siphoned to a point below its seal. This trap, therefore, is absolutely safe against siphonage, so long as there is air in the main waste line and the pressure of that air never goes below atmospheric pressure.

So you see that, while Fig. 4 looks like a very fine piece of work and, from an artificial point of view, cannot be siphoned, yet there is an "if" connected with it.

If the air pressure in the waste line stays normal—always normal—neither higher nor lower than normal, then this trapping system, and continuous vent system, will be quite sanitary.

But—and there is always a "but" in connection with an "if"—should the air pressure in the waste line ever become either higher or lower than normal, then the trap seal will be affected accordingly. If the pressure drop becomes less than, say, 2-inch water column, or 1 ounce per square inch, and that is not much, the trap seal will become siphoned into the waste line, not due to any siphonic effect of the trap or its connections for they are perfect, but solely to a condition existing elsewhere in the building.

Things are not always what they seem in plumbing. The several units comprising a plumbing system do not depend entirely upon their own perfection for satisfactory operation. There should be a co-relation between these units whereby the success of a unit will not have to depend upon the success of another unit for satisfactory service. Our business is to safeguard every unit, which is vital to health, so that the vital unit will always operate perfectly and independently of the operation of all other units in the system. That is one reason why individual back-venting is preferable to continuous venting. It safeguards the seals of all traps against all conditions, seen and unseen, which might at any time operate detrimentally to the trap seals. And that's one reason why the writer favors full back-venting as compulsory in every plumbing code. It costs a little more, just a little, but it is safe, positively safe, and has proved itself to be so for more than a quarter of a century. That is a record. No ventless system of plumbing has such a record, at least not to the writer's knowledge, yet some master plumbers today are pushing themselves into the limelight in the garb of public benefactors. They say: "Do away with vent pipes and save money!" These self-appointed coin-savers are on the wrong track. Their policy really is a waste of money. It means more sickness, more doctor bills and more undertaker's expenses. Why run risks with health? Why play with fire till you are burned? Why struggle to cheapen plumbing at the expense of quality? Why not work together to build up better, more efficient and more sanitary systems of plumbing? That should be our ideal—not to cheapen—cheapen—cheapen plumbing by omitting back-vent piping, which, every intelligent master plumber and sanitary engineer knows is vital to safe and sound sanitation.

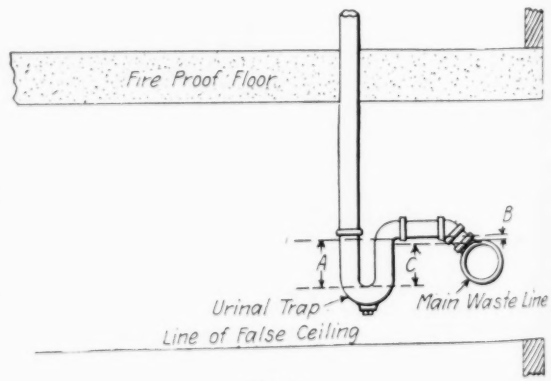

Fig. 4.

Referring to Fig. 2 we note that the waste pipe for lavatories runs along face of wall, inside the shaft and directly back of the lavatories. The plan view does not show how high the pipe runs, but the fact that there is no individual back-venting done at the lavatory traps is proof that the waste line runs up near or at the trap level. Note that the lavatories discharge into a waste with continuous vent. That vent joins the vent stack at a point, say, 6 inches above level of lavatory slabs. The question may be raised regarding the effect of the pitch of the waste pipe on the height of the lavatory traps.

(Continued on Page 271.)

COMMENT *on* ANTI-SIPHON TRAP TESTS MADE *for* HOUSING CORPORATION *at* BRIDGEPORT, CONN.

Vents and Revents Cannot Be Dispensed With if Margin of Safety is To Be Maintained

By Thomas J. Claffy,
Former President of The American Society of Sanitary Engineering

Thos. J. Claffy.

IT is with much interest that we read the report of the Test Committee on Plumbing in the United States Housing Corporation's Buildings at Bridgeport, Conn., which appeared in the April 19th issue of "Domestic Engineering," but it leaves us with the desire to have access to the complete report of the committee, made up as it was of distinguished and well known men in the sanitary engineering field. We should like much more complete information as to the manner in which the tests were made, the circumstances affecting them, and details of just how the installations were made. The drawings, as reproduced, show how the plumbing was installed in the corporation's buildings, but nothing is shown of the method of installation under the Bridgeport system. It is important that, for the purpose of true comparison, complete data be assembled in order that proper criticism can be made.

The committee has announced, in a brief outline, the general results of "exhaustive tests." It is highly important to know the sizes of pipes used for soil, waste and vent purposes, the sizes of house drains, house and public sewers, location and size of main house trap with its fresh-air inlet, normal head of water in street sewer, and information as to flood water conditions.

It is also highly important that we know whether or not there was any attempt made to determine results of tests assuming a full head of water in the house and public or street sewers. The committee stated that in G-2, three-story apartment buildings, the system was found to resist siphonage better than the vented system installed substantially in accordance with the Bridgeport regulations in a similar building equipped for the purpose of the comparative test. On the face of it, this is a strange statement.

In the absence of the drawings of what we may call the vented system, we cannot well make a true comparison, but it is evident, however, that the committee did not consider the effects of back pressure in plumbing systems.

In summarizing the results at Black Rock group of buildings, under paragraph D, the committee states it is their opinion that "failure through siphonage is more serious than failure through back pressure." Right here is where sanitary engineers and others, who have had experience, will disagree with them. From the very nature of the conditions surrounding them it is evident that this is not a statement of facts.

In a plumbing system subject only to siphonage, the tendency would be to draw air from the room through the trap and waste pipe into the house drainage system. Where back pressure was in evidence, the tendency would be to force the sewer air back from the drainage system by the same route into the room. As a matter of fact every plumbing system is subject to the alternating effects of siphonage and back pressure. Wind pressure is responsible in a great measure for this. The discharge of plumbing fixtures, however, may be considered a more frequent cause of trouble in this respect. Back pressure in plumbing systems is augmented during heavy rain storms or periods when sewers are completely filled owing to floods.

The committee evidently had some thought of the necessity of relieving back pressure when they mentioned, under paragraph E, the addition of a 2-inch air relief pipe connected near the bathroom fixtures on the first floor and extended to the roof. They also mention that plumbing should have a sufficient factor of safety, also that in their opinion the extent of fouling will not reduce to the danger point the trap seals of the types of anti-siphon traps used in these instances.

Experiences.

Much might be said with relation to experiences respecting failures of plumbing systems improperly designed relative to air relief. The loss of trap seals was due in practically every case to excessive back pressure. The writer has a distinct recollection of a modern plumbing installation in one of our tall office buildings, put in according to city ordinances, in which much annoyance was caused the tenants by reason of closets and other fixtures, having their water seals blown out during periods of heavy use of the toilet rooms on the top floor. It developed that the vent pipes were too small. A 6-inch soil pipe in a 18-story building should have a 6-inch instead of a 3-inch vent pipe, as was found, to maintain trap seals.

The proceedings of the American Society of Sanitary Engineering for the years 1912 to 1915 contain many interesting experiences in this respect. It is a matter of common knowledge among sanitary engineers that failure of a plumbing system by reason of improper design or installation is invariably in evidence through the alternate siphoning and blowing out of trap seals. A partial vacuum is formed within the system, which at once breaks the water seal in traps, almost immediately thereafter, and air pressure is formed which causes a flow of foul air through the

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The PRINCIPLES *of* REFRIGERATION

Three-Fourths of Installations Are of Small Capacity and Offer Another Opportunity for Progressive Plumbing and Heating Contractors to Extend the Scope of Their Work on a Profitable Basis

By Charles L. Hubbard

Continued from Page 195 in the May 3rd Issue.

In Fig. 11 the steam supply for the heating coil in the generator is shown as coming from the ammonia pump exhaust. A machine of this type will operate with exhaust steam taken from a general heating system under a slight back pressure, and plants are also operating successfully in connection with the Webster and Paul systems of heating. The only power required for an absorption machine of this form is that necessary to operate the ammonia, brine and water pumps, which seldom exceeds one-third horse power per ton of refrigeration. If used in connection with the direct expansion system, the brine pump will of course be cut out.

The quantity of live steam required by the absorption plant is commonly given as 50 to 60 pounds per hour per ton of ice per 24 hours. If we assume that twice the heat absorption capacity is required per ton of ice as for simple refrigeration, then about 30 pounds of steam will be required per hour per ton of refrigeration per 24 hours. That is, practically one boiler horse power will be required for each ton of refrigerating capacity. While a certain amount of steam will be required for the pumping equipment, a considerable part of this will be available in the exhaust for use in the generator. These figures are for machines of fair size, and the efficiency will be somewhat less for smaller outfits, although there probably will not be so much difference as in the case of the compression machines. Under these conditions it would seem safe to allow 1.5 boiler horse power for small machines of this type for ordinary approximations.

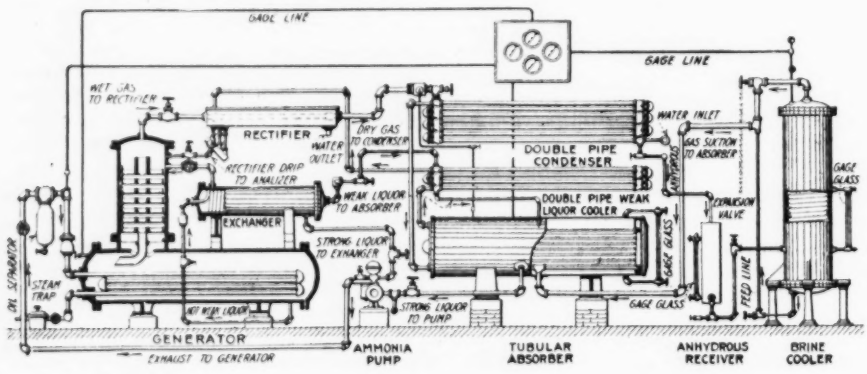


Fig. 11.

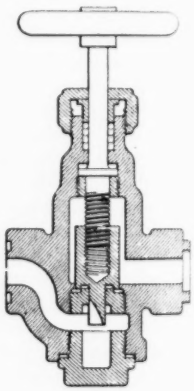


Fig. 12.

Selection of a System.

In making a selection between the two systems one must be governed largely by local conditions, such as cost of installation and operation, whether exhaust steam is available as a by-product, size and use of plant, temperature required, etc. Both are extensively used in the field covered by the present article, and either should give good satisfaction when properly installed. The absorption machine is generally considered to be the more economical for producing extremely low temperatures and is sometimes employed for freezing products in preference to the compression system, although both are adapted to either freezing or cold-storage purposes. When exhaust steam is available, the absorption machine has the advantage, as the compressor outfit is eliminated, thus simplifying the mechanical equipment as well as cost of operation. On the other hand, the compressor plant may be operated by gas engines or electric motors, thus doing away with the necessity of steam, which may be an important factor in deciding upon the type of system to be employed in any particular case.

Valves and Fittings.

Mention has already been made of the expansion valve for admitting the liquid ammonia to the expansion coil. Two general types of valves are commonly used for this purpose, the hand-operated and the automatic.

The most essential feature in connection with the construction of the hand-operated valve is this, that it shall be capable of close regulation. This is accomplished

in most cases by means of a wedge-shaped groove milled in an extension of the spindle below the seat, as indicated in the cut, Fig. 12.

The automatic valve acts on the general principle of a pressure reducing valve, and is set to maintain a constant pressure in the expansion coils, thus maintaining any temperature desired without further attention after it is once set. One valve of this type is operated by a combination of metal diaphragm and weighted lever.

Heavy construction, shut-off valves are used in large

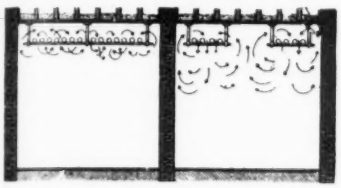


Fig. 13.

refrigerating work, and smaller sizes, up to 1 inch, have solid beveled discs integral with the stems, which close on beveled seats in the valve body, while in those of larger size the discs are swiveled on the stems and fitted with soft metal rings, which close on rounded seats.

In all pipe lines, which handle ammonia, no copper or any alloy containing copper, such as brass or bronze, can be used, as the ammonia will affect the copper. Neither is cast iron suitable, because under the action of ammonia it becomes porous. All piping, fittings and valve parts must therefore be of wrought iron or steel, and especially made for this purpose. As the escape of ammonia gas

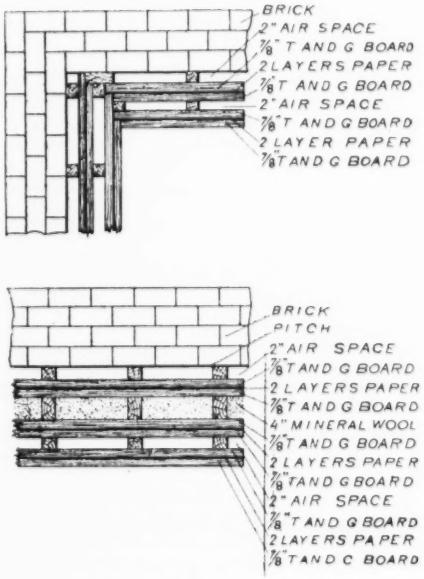


Fig. 15.

is dangerous in a building as well as expensive, great care must be taken to make the joints both tight and durable. The fittings should be extra heavy, especially designed for this class of work. When screwed joints are used, the fittings are heated, then screwed and usually sweated on with solder. In most cases, a recess is made at the end of the fitting which is either filled with solder or packed with some sort of soft packing forced in by a gland.

In case of screwed joints all exposed threads, which remain outside the fittings, should be covered with solder to prevent corrosion, which is likely to be rapid at this point, if the threads are left unprotected. The faces of flange fittings are tongued and grooved and packed by means of gaskets, soft lead being commonly employed. All fittings should be of such strength as to positively eliminate all possibility of breakage, owing to the settling

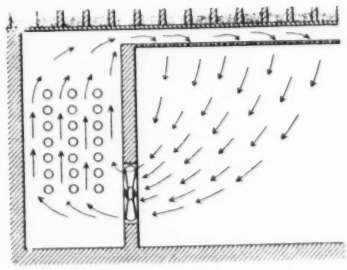


Fig. 14.

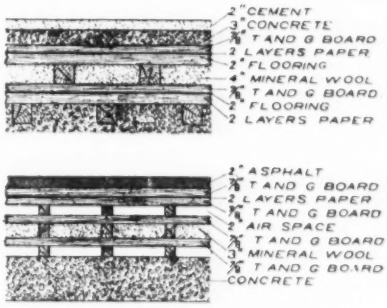


Fig. 17.

of the building or other reason, and those of the flanged type of such construction as to permit of the bolts being drawn up to the point of rupture without distorting the fitting. Piping and fittings should be tested to 500 pounds per square inch, and after erection the work should be subjected to an air pressure of 300 pounds, the joints being coated with soapy water to indicate any leakage.

Piping.

In a paper read before the Ohio Society of Mechanical and Electrical Engineers in 1910, H. D. Pownall states that "all piping used for ammonia work should be of genuine wrought iron." P. DeC. Ball in a paper read before the American Society of Refrigerating Engineers in 1912, seems to differ from this, and says: "From thirty-three years of personal observation in the construction, erection and operation of refrigerating machinery, and using iron pipe for the first fourteen years and steel for the next nineteen years, I am convinced that local conditions only, govern the corrosion of pipes in refrigerating work, and that chemically, and mechanically, mild steel meets the requirements of the refrigerating engineer in all respects better than any other pipe, for the reason that it is superior in point of finish, strength, strength of seam and uniformity of material."

From the above, the fitter may be able to make his own choice. Piping for the steam end of the compressor is the same as for any steam engine and requires no special comment. Piping on the low-pressure side of the refrigerating system may be of standard weight, also the brine piping when that system is used.

All piping on the high-pressure side should be of the smallest size possible, and extra heavy.

For ordinary work the following pipe sizes may be used:

Capacity of Machine.	Size of Suction.	Size of Liquid Line
5 tons.	1¼ in.	½ in.
10 tons	1½ in.	½ in.
25 tons	2 in.	½ in.
40 tons	2½ in.	¾ in.

These sizes are for pipes 100 feet in length, which will cover all usual installations. For greater lengths, use a size larger.

In the direct expansion system the length of pipe in a single coil is best limited to 1,500 feet, and from 300 up,

(Continued on Page 272.)

QUESTIONS & ANSWERS

THESE HEATING COILS SHOULD BE REMODELED.

Editor "Domestic Engineering":—I am enclosing a sketch or floor plan of a factory, showing the location and size of the coils used for heating. There are three floors to the factory all alike, with the exception that there is a small office and a small supply room partitioned off on the first floor. For purpose of figuring, all floors can be considered the same. The building is 40 x 160 ft., and the ceiling heights are slightly more than 10 ft.

Electric power is to be used, and the large power boiler taken out and a low pressure sectional boiler is to be used for heating. There is approximately 1,000 sq. ft. of 1¼-inch coil surface on each floor divided into six coils. These coils are return bend coils about 50 ft. long. Steam, at about 80 lb. pressure, direct from the boiler was formerly used and four coils on each floor usually gave all the heat required.

Can I use the coils as they are now, and will there be sufficient surface for low pressure heating? The owner does not think it necessary to change the coils but I hold that they should be remodeled.

Indiana. F. N. S.

The floor plan submitted is shown by Fig. 1, and indicates the location of the coils, as they appear on each floor. The general dimensions of the building are given, but no windows or doors are shown.

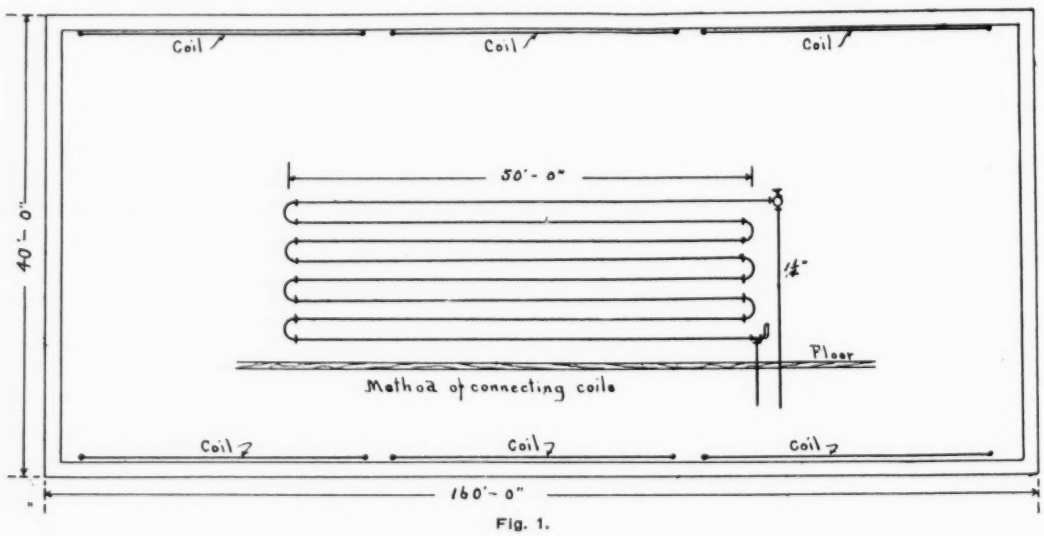


Fig. 1.

Correspondent is right in his contention that the coils should be remodeled. An eight-pipe 1¼-inch return bend coil is equal to an 1¼-inch pipe 450 ft. long. The actual length of the piping is about 400 ft., to which must be added about 50 ft. for the friction caused by the return-bends as the steam changes direction. It would take a long time to exhaust the air from this coil, and good service could not be had from steam at low pressure, as the coils are now constructed. They should be remodeled into 8-pipe mitre coils using manifolds 2-inch or 2½-inch on the run. No doubt sufficient space may be had between windows to extend the mitre upward against the side wall. The length of the mitre should be about 6 ft.

Not knowing the amount of glass surface nor the temperature desired, we are unable to advise as to the amount of surface required. We should judge that the full amount now in place (1,000 sq. ft. on each floor) would be required to heat the building properly.

WHAT CAUSED THE BOILER TO BURST?

Editor "Domestic Engineering":—I know of a case of a low-pressure, steam heating, cast iron boiler, on a one-pipe gravity system, with no valves in flow and return pipe, that had been in use for about twelve years, which upon being fired up this winter, had its fire pot and intermediate sections bursted, and party claims that it was done when there was plenty of water in it. I cannot see how this could happen. Would taking off air valve to quicken circulation of steam, when there was about ten pounds of pressure on boiler, cause the water to leave boiler and cause explosion?

Please publish in your Questions and Answers Department information about what is most likely to cause a boiler to crack, and if it is probable for this damage to occur, when there is sufficient water in boiler.

Ohio. B. E. E.

We are inclined to think that there is some mistake in assuming that there was water in the boiler, which was

fractured, as reported in the above communication. It is possible that somebody has closed the cocks of the water gauge, thus holding water in the glass and showing falsely that there was water in the boiler.

The removal of an air valve would not cause the water to leave the boiler, but there are conditions, such as oil or scum on the surface of the water, that under certain circumstances would assist the steam to carry water into the piping.

The responsibility for breakage of this kind is usually hard to locate. Sometimes the sections of a new boiler will crack, when the boiler is first fired due to the fact that in erecting the boiler the bolts holding the sections together had been tightened so securely that expansion could not take place when the iron was heated. A careful fitter will loosen the nuts of the bolts one turn or more after ascertaining that all joints are tight. The broken boiler, having been in service a number of years, could not have cracked from this cause. We have also known boilers to crack from the accumulation of rust between the sections, which originally fitted tightly against each other. As boilers are now constructed sections do not fit tightly against each other as they are held apart by a thin bead of iron running around the section, when sections come in contact with each other.

We feel sure that there is some circumstance unknown to and not reported by correspondent, as we are of the opinion that the fracture was due to low water in the boiler.

No water, or low water, and the admission of cold water to a hot boiler are the most frequent causes of breakage.

INSTALLING AN INDIRECT HOT WATER RADIATOR.

Editor "Domestic Engineering":—I have installed an indirect hot water radiator from which I can get no results. It is located under a large reception hall of a residence. I enclose a sketch, showing how the radiator is connected and boxed. This box or casing is made of galvanized iron, and there is a space of eight inches above and ten inches below

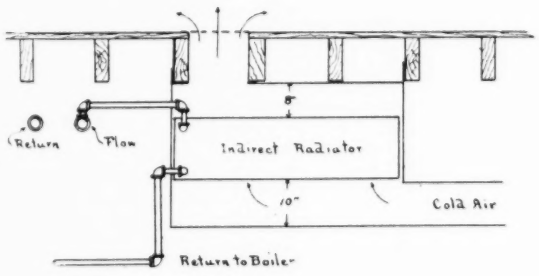


Fig. 1.

the radiator. The cold air comes from a cellar window about six feet from the radiator and enters the casing at the bottom as shown by the sketch. The size of the cold air duct is 10 x 16 inches, the hot air duct is 12 x 16 inches, and the register 12 x 16 inches. The radiator consists of ten 12-ft. sections of pin indirect, 120 ft. in all.

You will see by the sketch that the flow and return mains are just above the level of the flow connection to the radiator, and to help the circulation I have taken the return from the radiator back to boiler separately. Can you tell me what is the reason for the radiator not circulating?

Erie, Pa. M. A. N.

The trouble, judging from the sketch submitted, is due to the air pocket in the flow connection to the radiator. As installed, this air pocket interferes with the circulation. The method of piping the return is good and should help the circulation after the faulty connection of the flow has been corrected. The method of casing the radiator is good, but the size of the hot air duct and also of the register is too small

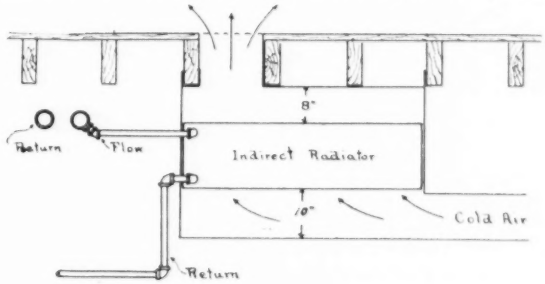


Fig. 2.

for good work. A hot air duct should have 2 inches of area for each sq. ft. of radiation, or at least 240 sq. in. We suggest a duct 16 x 16 inches in size (256 sq. in.) The register should be about 16 x 20 inches. The cold air inlet is ample and, in fact, could be made slightly smaller.

We suggest that the flow connection be taken from the bottom of the main, as illustrated by Fig. 2. The circulation will be sluggish, owing to the position of the main. Much better results could be secured, if the flow connection to the radiator could be taken from a riser, running to an upper floor, as illustrated by Fig. 3. In planning the work a second floor radiator could be located at a point nearly above the indirect, so that the plan suggested by Fig. 3 might be followed.

In general the use of indirect radiators for hot water heating should be discouraged, as the number of B. t. u. delivered per sq. ft. of surface will average only about 200. For tempering incoming fresh air for use for ventilation, an in-

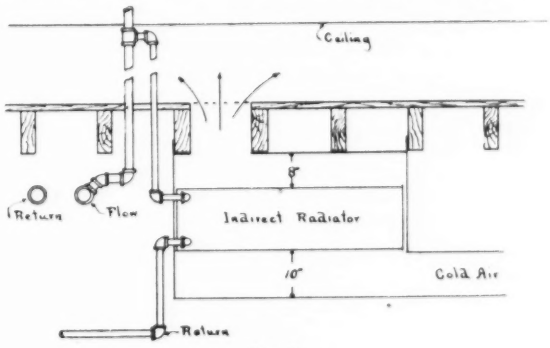


Fig. 3.

direct hot water radiator may be used with success, but, when used for heating, generous capacities must be provided and good circulation assured, otherwise failure will result.

Peoria, Ill.—Fred Seifert & Son have been awarded contracts to install plumbing and heating systems in a $100,000 factory at East Peoria, Ill.

Providence, R. I.—P. J. Tierney Co. has been awarded the contract to install the plumbing system in the power plant, tunnel and stair tower on Valley Street.

Dorchester, Mass.—J. P. Landers, 263 Bowdein Street, has secured contracts for the installation of plumbing and heating systems in three dwellings in the Roxbury District.

COMMITTEE TO DECIDE WINDOW DISPLAY CONTEST.

The Question "Should Plumbing Fixtures Be Priced?" Brings Many Interesting Answers For and Against—Contest Closes May 15th. First Prize $15; Second Price $10; Third Prize, $5. Have You Had a Try at the Prize Money? Better Hurry, Time Is Getting Short.

By Charles H. Rosemont.

THE committee selected to decide the question, "Should Plumbing Fixtures Be Priced in Window Displays?" which was published in the April 19th issue of "Domestic Engineering," is composed of three prominent members of the Chicago plumbing fraternity, whose pictures are reproduced herewith. They are: Charles J. Herbert, who is well known as the worthy treasurer of the National Association of Master Plumbers; Jos. W. Cannon, former president of the Chicago Association of Master Plumbers; and Fred W. Page, secretary of the Chicago Association. These gentlemen have kindly consented to act as judges, and the results of their analysis will be published in the first issue in June, when prize winners also will be mentioned.

Our readers will recall the discussion which took place in the former article, when two letters were published, one for and the other against the pricing of fixtures on display. Each letter was convincing, yet left the reader undecided, as a general rule, what scheme should be adopted. This is brought out in the letters already received and many other interesting points, not made originally, are discussed by men in different parts of the country.

What Is Your Opinion?

All of us recognize that the progressive master plumber of the present day is not only a contractor, but also a merchant. The adoption of merchandising methods involves making window displays as attractive as possible to get the public's interest and at the same time make people enter the store. Admitting that a display of good plumbing equipment compels the passer-by to stop and look, would the addition of price cards be responsible for his entering the store to listen to further explanations as to the merit of the goods and the cost of installing them?

When the results of this contest are published, the winning letters will contain much food for thought, and possibly the suggestions incorporated will be adopted by members of the craft throughout the country.

The prime object of this discussion is to bring out the best ideas, so that they may be beneficial to the trade at large. "Domestic Engineering" does not take a decided stand as to whether or not fixtures should be priced. It is up to the individual, and everybody is invited to participate in this exchange of ideas.

We want to hear from you. Turn to your files and get out the April 19th issue of "Domestic Engineering," and read what has already been said for and against the pricing of fixtures on display.

Send us your ideas. You may win a prize. We hope you do, and you will have just as much show as the other fellow—the judges will see to that.

Contest closes Thursday, May 15th.

Let's go!

Fred W. Page.

Jos. W. Cannon.

Charles J. Herbert.

SMITH-HUGHES LAW AS APPLIED TO PLUMBING.

The Federal Board of Vocational Education, Washington, D. C., has issued Bulletin No. 20, covering the Smith-Hughes Law respecting vocational education. The provisions of the law are such that they require not only state or local communities to provide teachers for vocational schools, but also state or local communities to provide space in buildings for equipment and an annual appropriation for its maintenance. The bulletin lists the following as the equipment necessary for fitting up a plumbing shop, in which connection it illustrates plans of such rooms in prominent institutions as well as giving valuable information for the guidance of those establishing such educational courses.

Requirements for Plumbing Class.

In designing a room for plumbing, provision should be made for more than the average ceiling height. This is necessary in order to provide for the installation of plumbing systems in practice houses of at least two stories and basement. In some cases schools have arranged for two floors of the building to be given to plumbing, and cut large openings in the floors through which to extend the rough work. In any case, it is necessary to provide 500 to 700 square feet of earth floor space for installing drainage systems in tile and cast-iron pipe.

For a class of 10 to 15 pupils the equipment should include:

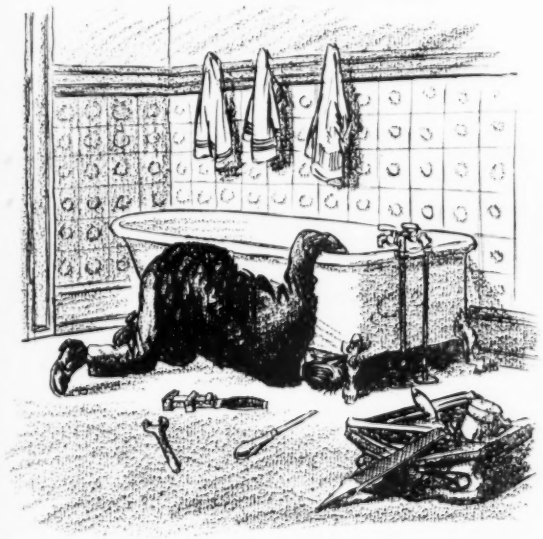
3 metal topped tables, tops ¼ by 42 by 96 in.
12 melting pots with gas burners (or plumbers' furnaces).
2 plumbers' gasoline torches.
1 skeleton of a building for practice work.
5 plumbers' kits.
6 each of 10-in. and 14-in. pipe wrenches.
3 each 18-in. and 24-in. chain tongs.
2 each 24-in. and 36-in. chain tongs.
Sets of stocks and dies, cutters, and supplies for lead work.
A supply of water, gas and lead pipe, fittings and plumbing fixtures for practice work, including water-closets, urinals, lavatories, sinks, bath tubs, trap vents, and drain and drainage pipes.
Value of equipment, $1,000 to $2,500.
Annual cost of supplies per pupil, $10 to $15.

THIS IS THE LIFE!

Squalls, Storms, Calms and Hot Spells Encountered by our Frail Craft in its Perilous Journey on The Sea of Life

By W. W. Hughes

EVERY plumber has had one or more experiences with the elusive diamond ring and the bath waste. Several years ago, on a hot, sticky Sunday afternoon, a young lady came rushing over to our house. She was very much excited and very much out of breath. She wanted a plumber and she wanted one quick. A guest from out-of-town had removed her rings, placed them in the jewel cup on the bath faucet, and unconsciously brushed them into the tub and the water had carried them away. At least, this was the story. They hoped that the rings had lodged "somewhere" in the pipes and they wanted a plumber-detective. I went over. It was a sweet proposition. The hostess was somewhat nervous, but the ring-losing guest was frantic. The plumbing was old. The pipes were installed for service, not accessibility. The plumber was dolled up in his Sunday finest, but to appease the ladies, he crawled and wiggled around the end of that tub, tugged and twisted until he got the trap apart. By this time, his Sunday apparel looked like a coal miner's outfit. A careful search failed to reveal the missing jewelry. It looked like a hopeless case. He didn't want to break the news as he feared the results. But just then he heard an exclamation of joy. The guest had found her jewels on the dresser! There were profuse explanations, but it was a mad, dirty plumber who wended his way homeward.



The Plumber-Detective is Also a Contortionist.

Jewelry Has an Affinity for Sewers!

Years have passed, and the incident almost forgotten, when one evening recently the plumber, now proprietor of his own place of business, strolled into a neighborhood hardware store to meet a few of the old gang and pick up a little neighborhood gossip. Greetings were exchanged, and after awhile one of the men present said to the plumber: "Bill, sometime, when you have a man to spare, send him over to the house and have him take along all of the tools in the shop and a set of carpenter's tools also. No hurry at all; just send him over when you get time." "All right," replied Bill, "but what is he supposed to do after he gets there?" He replied, in a matter-of-fact way: "Why, you see, my wife laid her rings in that little cup-shaped affair on the bath faucets and now she can't find them and so she thinks they went down the sewer pipes."

"What are they worth and when did this happen?" asked the plumber.

"The best one cost me $250 eight years ago, and the other one is a cheap affair, worth possibly $8 or $10, and they fell in about ten days or two weeks ago."

He was assured that it would be attended to very soon. Having a call over that way the next morning, Bill told one of his plumbers to see if he could locate the rings, and when the plumber came back to report that he had found the best ring, but the other one could not be located, he also said that the lady of the house had told him that the rings had been in there for six weeks.

And if he hadn't happened to meet the plumber when he did they would be there yet.

Prices, People and Plumbers.

When it comes to prices, we often find them as varied as the colors in the rainbow. The other day we happened to want some gaskets of a certain kind. A supply house catalogue and price list gave a price of $2 per dozen; a specialty firm showed them at $1.38; and another specialty concern was selling the same thing for 90 cents per dozen. Plumbers are often like that. As a rule, you get a different price in every store. It reminds me of a chap that used to live across the way. He quit his job and bought a grocery store in a small town about fifty miles from here. He wanted his household goods moved there and figured it might be well to get a price on an auto truck for the job. He stepped into a transfer company's office and told them his trouble. The clerk picked up a book from the counter, opened it to page N, and quoted him a price of $51.30. In talking to me a few minutes later, he said that he had told them he would notify them as soon as he was ready and also added that he had thought of getting another price on it, but when he found that they had the rates printed, he came to the conclusion that they were all in an agreement and it would be a waste of time to look further. That same thing goes with the plumber. When a customer comes in and wants a price on a fitting or a fixture, it should be possible to open a price book and give him the correct price right off the bat. It isn't business-like to refer to a book, then grab

a pencil and a half-used envelope, look somewhere else for a discount sheet, do a little calculating and then make a price. It looks like small town stuff and it is.

Simplified Invoicing Will Bring Rejoicing.

Some fellows sure make a lot of trouble for themselves. Did you ever see a plumber's bill made out in detail with even the gasoline, candles and carfare carefully computed and carried out? I have. In fact, I used to make them out that way, until I got a little common sense. Now we make them short and sweet. Sometimes we can't be very explicit, so we merely write:

"Repairing plumbing—so much; or "repairing boiler"—so much, but, as a rule, we usually go a little further into detail and say: "To installing one complete new ball valve in closet—so much"; or "To furnishing and installing one 30-gal. hot water tank"—so much—and the beauty of it is that the customer invariably pays without asking any further questions. In fact, the customer asks himself one question, first of all: "Am I getting value received?" If he can answer yes, that settles it. If there is any question, he may drop in. The master plumber or his bookkeeper can turn at once to the journeyman plumber's original charge slip and can give the customer a list of the items involved with billing prices for same, also the number of hours on the job, and, without making out an itemized bill, but merely by quoting the figures, he can satisfy the customer that the charge is proper. The real value of this system lies in the fact that it saves labor in the first place and, in the second place, the customer is not given a list of plumbers' supplies and prices, thereby enabling him to compare one invoice with another. You know, some of the fellows that had work done in the years previous to 1918 and 1919 got to checking up and, although they didn't like it, they had to pay double for everything that they were eating or wearing, but at the same time they wanted plumbing at before-the-war prices.

Pity the Poor Public.

To be really fair with the public, they sure have a kick, but the sad thing is that they keep kicking the wrong chap. The master plumber is the fellow that stands between the general public and the jobber and manufacturer. The manufacturer often figures that, if he makes a closet outfit and furnishes a flush valve, requiring a special rubber ball, he will get all of the repair business for his line of goods. But as sure as you are a foot high, when the manufacturer gets that closet through the supply house and into the plumbing shop and then into the job, he will find that enough time has elapsed so that the specialty firm is often johnny-at-the-rat-hole with the identical ball that is needed and, if we believe them, it is much better than the original article. Or, it may be that he wants to save a little money, and so he cuts down the seat diameter of the fuller work or the compression and the result is a gasket just a shade smaller than the regular size. Or, he may elect to use odd-threaded screws. In fact, there are so many angles that it is difficult for the master plumber to equip his repair men so as to make it possible for them to go out to do a job without having to come back for some little item. It isn't always tools that necessitate return trips. It is the lack of standardization of materials which makes those trips necessary and the jobber and manufacturer are primarily to blame for this condition. Standardization put the flivver on the map, and, when our chaps got in the war game, it was standardization that finished the job.

Inspection Doesn't Always Mean Detection.

Inspection is a great thing. A chap dropped in the other week and looked over the premises, said that he was an inspector for the insurance company, and finally went outside and measured the signs over the store front. He came back inside and said that everything was O. K. The next day the big sign over the front of the store fell down and just missed a couple of people that were passing by. They were either lucky or out of luck, just as a fellow looks at it. If they had been killed, they surely would have been

The Sign That Was "All Right."

out of luck, but if the dog-gone sign had just bruised them a little they might have secured enough damages to buy a new summer outfit.

Anyway, we're getting three squares a day, go to the movies occasionally, paying a *little* income tax and aren't worried at the approach of July 1st, but it's a gay life, Alphonso, yea, verily.

COLORADO MASTER PLUMBERS' CONVENTION.

Just as we go to press we are in receipt of the proceedings of the twenty-second annual convention of the Colorado State Association of Master Plumbers, which was held in Denver, May 2nd and 3rd.

A complete report of the meeting will appear in the next issue of "Domestic Engineering." The officers elected were as follows:

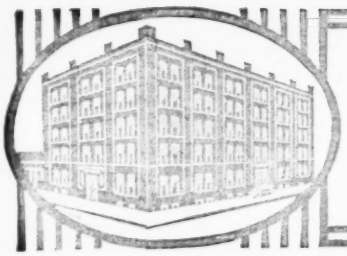
President, Dennis E. Burke, Pueblo.
Vice-President, Frank Bernzen, Boulder.
Secretary, W. O. Warlum, Denver.
Treasurer, J. E. Kiefer, Denver.
Sergeant-at-Arms, W. H. Hensler, Denver.

Delegates to National Convention: George E. Smith, Denver; Dennis E. Burke, Pueblo; and Chris Irving, Denver.

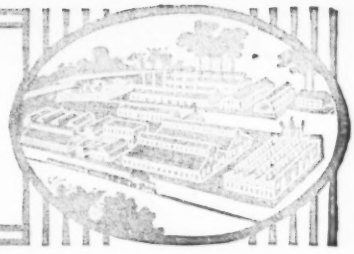
Special Welfare Committee: Chris Irving, Denver, chairman; T. McCarthy, Colorado Springs; M. Stone, Greeley; W. S. Forbes, Pueblo; and Albert F. Kelling, Boulder.

Tennessee Master Plumbers to Meet in Nashville.

The Tennessee Master Plumbers' Association will hold its annual convention at Nashville, Tenn., on Thursday, May 15th, according to the official call which has just been issued by President J. W. Hull, of Memphis. National President L. McNamara, of St. Louis, will be present at the convention, and an exceptionally large attendance is expected.



Among the Wholesalers and Manufacturers



COMPANIES RECENTLY INCORPORATED.

The Safety Vapor Heating Corporation, of Buffalo, N. Y., has been incorporated with a capital of $10,000, to manufacture heating specialties. The incorporators are: H. J. Turner, L. A. Cherry and W. P. Powell.

The Humidity Control Co., of Indianapolis, Ind., has been incorporated with a capital of $20,000, to manufacture air-humidifying systems. The incorporators are: Ira A. Minnick, Arthur E. Krick and George M. Corbaley.

The W. S. Kaulback Co., of Malden, Mass., has been incorporated with a capital of $25,000, to manufacture tools and plumbing specialties. The incorporators are: Ralph M. Kaulback, C. P. Wilson and B. T. Kaulback, all of Malden, Mass.

HEATING SUPPLY CO. ORGANIZED IN CHICAGO.

The Central Heating Supply Co. is the name of a new company organized in Chicago by Thomas W. Pearson, J. Harvey Manny and Charles E. Manny, all of whom are well known in the heating field. The capital has been fixed at $20,000.

NEW PLUMBING SUPPLY HOUSE IN KANSAS.

The Salina Supply Co. has opened a plumbing supply business at Salina, Kan. The officers of the new company are: President, Harry Cooper, of the Harry Cooper Supply Co., Springfield, Mo.; vice-president, Karl M. Davis, and secretary-treasurer, W. W. Carnagey.

CONCERNS IN NEW LOCATIONS.

The New England office of the Richardson & Boynton Co., New York City, has been moved to 98 Federal Street, Boston, Mass. The company's warehouse will remain at 17 Farnsworth Street, South Boston.

The Excelso Specialty Works, of Buffalo, N. Y., has moved its office from the Henkel Building to 601 White Building.

HAVE PURCHASED THE BUSINESS OF THE BICALKY FAN CO.

Hersh & Bro., of Allentown, Pa., have purchased the business of the Bicalky Fan Co., of Buffalo, N. Y., and will hereafter manufacture air washers, fans and ventilators.

BUYS RIGHT TO MANUFACTURE ADDITIONAL PATTERNS.

The Crampton-Farley Brass Co., of Kansas City, Mo., has purchased the floor and areaway drain patterns and stock of the K. C. Flashing & Drain Co., also of Kansas City. The Crampton-Farley Co. will continue the manufacture of these specialties in addition to its own line of products.

AMERICAN RADIATOR CO. DECLARES DIVIDENDS.

The American Radiator Co., Chicago, announces that a 3 per cent quarterly dividend has been declared on its common stock, payable June 30th to stock record of June 21st, and a quarterly dividend of 1¾ per cent on the preferred, payable May 15th to stock record of May 7th.

BRUNSWICK-BALKE-COLLENDER CO. DECLARES EXTRA DIVIDEND.

An extra dividend of 1¾ per cent on its common stock has been declared by the Brunswick-Balke-Collender Co., of Chicago.

THE ANNUAL MEETING OF THE OHIO CHAPTER OF THE A. S. H. AND V. E.

The Ohio Chapter of the American Society of Heating and Ventilating Engineers held its annual banquet at the Chamber of Commerce club rooms in Cleveland, O., on Thursday evening, May 8th. Good music contributed to the success of the event.

PLANNING OR BUILDING FACTORY ADDITIONS.

The American Radiator Co., of Chicago, has completed plans for a one-story addition, 40x44 ft., to its boiler assembling plant in Buffalo, N. Y. The addition will cost in the neighborhood of $20,000.

The Keystone Supply & Manufacturing Co., of Philadelphia, will build a $5,000 addition to its plant.

The F. R. Dengel Manufacturing Co., of Milwaukee, Wis., will build a 35x60 ft. addition to its plant on Fourth Street in that city.

The Mueller Fountain & Fixture Co., a new concern controlled by stockholders of the H. Mueller Mfg. Co., is building a two-story plant, 60 by 160 feet, in Decatur, Ill.

WESTERN TRADE GOLF ASSOCIATION TO HOLD FIRST MEETING MAY 27TH.

The opening of the 1919 season of the Western Trade Golf Association will take place on Tuesday, May 27th, at the Olympia Fields Country Club, Chicago. This is one of the newer courses in the Middle West and one of the finest and most picturesque. The association has held meetings there during the last two seasons and the members, who attended these gatherings, are looking forward with much pleasure to the initial match this year. There are several courses at this club, and any of them are worth traveling many miles to play over.

Treasurer C. S. Pitkin, with his usual aggressiveness, is first on deck, and this year he will have the pleasure of collecting $5 for the annual dues, instead of $2 as in former years. "Pit" has the reputation of being the best treasurer that the association ever had, and the only way to appease

his financial appetite is to "come across and come across quick." Three new officers will also make their debut at this meeting, the president, C. D. Little; the vice-president, W. Wickersham and the secretary, Peter M. Munn. William Byrd, as chief of the commissary department, continues in that capacity, as do Handicapper J. P. Dugger and Captain Paul Blatchford. Captain Blatchford is back in Chicago again, after having enjoyed some splendid golf over the Pinehurst courses.

ILLINOIS CHAPTER WILL HEAR TALK ON CENTRAL STATION HEATING.

The May meeting of the Illinois Chapter of the American Society of Heating and Ventilating Engineers will be held on Monday, May 12th, at 7:30 p. m., preceded with the usual dinner at 6:30. The speaker of the evening will be F. B. Orr, mechanical engineer of the Illinois Maintenance Co., who will give the members the benefit of his experience in the operation of central station heating plants. Inasmuch as the data he will present will cover largely Chicago installations, the address will be of particular value to those in attendance.

Notice of this meeting has been sent out by former Secretary W. L. Bronaugh, who announces that Secretary A. E. Stacey, Jr., has resigned because of his departure for New York, where he will be permanently located.

E. T. G. A. TOURNAMENT COMMITTEE APPOINTED.

President F. K. Chew, of the Eastern Trade Golf Association, has appointed the following Tournament Committee: L. H. Quackenboss, chairman; J. G. Geoghegan, G. G. Schmidt, C. W. Bennett and W. G. Le Compte, honorary member. The committee has taken up its duties and is planning for the spring tournament which will be held in May, probably the 15th or the 22nd.

L. O. KOVEN IN CONFERENCE ON TRADE EXTENSION.

Several jobbers of plumbing supplies and tradepaper men of New York City were the guests of L. O. Koven, president of the National Committee of the Confederated Supply Associations, on Thursday, May 1st, at a luncheon at Hahn's Café. The purpose of the gathering was to discuss matters affecting the plumbing business in Greater New York, and some practical suggestions for encouraging business along the lines of the Trade Extension Movement were offered.

In opening the discussion, Mr. Koven expressed his appreciation of the work the trade press has been doing in the interests of trade extension, and offered for consideration a new idea for the development of repair and overhauling work. "All industries," he said, "inaugurate Spring drives for encouraging business. Spring is the time for overhauling in buildings; the paint manufacturer offers suggestions for improving the exterior dress, the furnishings man makes all sorts of inducements and, in fact, intensive selling effort is applied for the improvement of every part of the home, except the plumbing equipment. The plumbing trade, manufacturer, jobber and retailer alike, has been negligent in this respect. It is up to the people in the industry to see to it that where additional or new plumbing is needed, it is installed. These three factors are responsible for the health of the public."

As a good place to start, Mr. Koven suggested the New York downtown business district, where, he said, the sanitary laws, to say nothing of the moral obligation involved, are being evaded every day. He told of the poor and inadequate plumbing equipment in most of the older buildings in that section, the owners of which can afford to install ample and good washing and toilet facilities, but have failed to do so, because, in most instances, no one has ever attempted to bring the matter to their attention.

Mr. Koven suggested that investigations be made of conditions and the facts so obtained published, then the jobbers and plumbers could make individual appeals to the owners. He said he was confident that enough business could be developed to keep every plumber busy.

A number of suggestions for ways and means of accomplishing the desired results were offered by those present, and while no definite plan was adopted, it was thought that a block by block canvas of the section would be effective. Actual conditions could then be ascertained, and where improvements are necessary a consistent and persistent follow-up of the owners by publicity and direct appeals by mail and personal calls of the plumbers should be instituted.

Any further suggestions on the manner, in which this work can be taken up, will be welcomed by Secretary Frank S. Hanley, of the National Committee of the Confederated Supply Associations, 261 Broadway, New York.

Those present at the luncheon with Mr. Koven were: Martin Behrer, treasurer of the Eastern Supply Association; Frank S. Hanley, secretary; John A. Murray, Edward Smolka and Mr. Sommers, jobbers of New York City; Frank K. Chew and Mr. Spencer, both of "The Metal Worker;" W. G. McCormick, of "Merchant Plumber & Fitter;" A. A. DuMond, of "The Plumber's Trade Journal;" and C. G. Fundinger, of "Domestic Engineering."

PRESIDENT L. McNAMARA OF N. A. M. P. ASKS MEMBERS TO SUPPORT TRADE EXTENSION COMMITTEE.

Under date of May 1st, President L. McNamara, of the National Association of Master Plumbers, sent a letter to all members of the association urging them to help, in every way possible, the work of the Trade Extension Committee. In asking this co-operation, President McNamara says that it is the greatest project the industry has ever undertaken, and one that will mean profits for every master plumber and fitter throughout the country. The work that was started during the war will be carried on by the Trade Extension Bureau, and there are unlimited possibilities for developing business. This bureau will conduct National sales weeks; do educational work; furnish members with various systems needed in their businesses. In short, it will work to the end of helping the trade in every way by making the business more profitable.

On May 1st the Trade Extension Bureau started a campaign to raise money to finance the project. The sum of $50,000 will be needed the first year. Every jobber and manufacturer has been solicited for a subscription and they will give only to the extent of the energy and interest that the members manifest in backing up the move. Members can help by asking traveling men, who come into their shops, how much their firms have contributed to the fund. By everybody working hard, the finance campaign is bound to be put across, says President McNamara. It is up to the contractor to show the manufacturer and jobber that he is awake to the possibilities of trade extension, and everybody will profit materially.

Personal Mention

Howard Coonley has severed his connection with the Emergency Fleet Corporation and has resumed his duties as president of the Walworth Mfg. Co., of Boston, Mass.

Joseph F. Carroll, assistant manager of the Chicago office of the Standard Sanitary Mfg. Co., has just left on an extended trip through the West.

Herman W. Nelson, president of Moline Heat, Moline, Ill., was a visitor to Chicago this week, and while here spent some time with A. S. Lindeblad, of Sanborn & Lindeblad.

Joseph G. Hayes, of the heating and sanitary engineering firm of Hayes Bros., Indianapolis, Ind., was in Chicago this week. He expressed himself as being sure that building operations will soon be in full swing.

Wm. D. Hammet, of the Hammond-Byrd Iron Co., Birmingham, Ala., and Wm. E. Turner, of the L. Wolff Mfg. Co., Chicago, were in San Antonio and Austin, Texas, respectively, last week, where a representative of "Domestic Engineering" met them.

I. Jacobs, manager of the New York office of the Atlantic Radiator Co., of Huntington, Pa., speaks encouragingly of business prospects after having returned from a trip through his territory. He reports an active demand for his company's products for immediate delivery, during the past few weeks.

R. Ashton has just been appointed sales manager for the Riverside Boiler Works, Inc., of Cambridgeport, Mass. Mr. Ashton was for some years associated with the engineering firm of Cattell, Howard & Ashton, at San Francisco, Cal., and for the last two years in the United States Aviation service, having just recently returned from France. He will be located at the company's main offices in Cambridgeport.

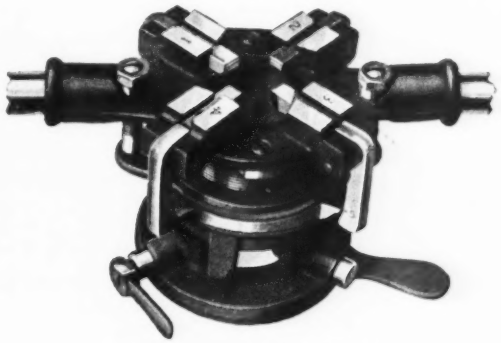
Arthur A. Schley, manufacturer's agent, Arrott Building, Pittsburgh, Pa., has just been appointed distributor for the Troop Mfg. Co., of Pittsburgh, in Ohio, northern Kentucky, West Virginia and western Pennsylvania, with the exception of Pittsburgh. Mr. Schley also represents the American District Steam Co., the Universal Distributing Co., and the Victor Brass Mfg. Co.

SHOP EFFICIENCY BIGGER BUSINESS **NEW** SELLING OPPORTUNITIES REPLACEMENT WORK

EQUIPMENT AND IMPROVEMENTS

New Receding and Ratchet Receding Pipe Threaders.

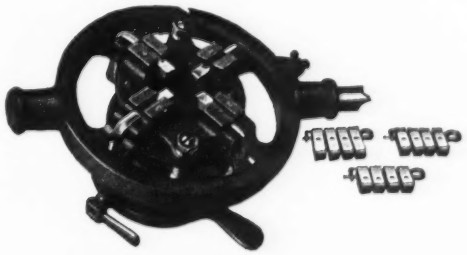
Two special advantages are claimed for a new receding pipe threader just placed on the market: The quick release of the chasers at the end of the cut and quick resetting to cutting size. In operation the tool is wound onto the pipe until a thread of the desired length has been cut, after which the threader may be pulled straight off. To return the threader to its original cutting position it is merely necessary to release the lead screw, lift the head, reset the trigger and begin another cut. The chasers are narrow and travel along the pipe parallel to the thread they are cutting and not parallel to the axis of the pipe, which is said to reduce friction. The chasers are interchangeable and made in such a way that it is possible to replace a single chaser in case of breakage. At the beginning of the operation, the chasers cut a full depth thread and as the work progresses the levers, which support the chasers, gradually change their position, permitting the chasers to recede until they have finally backed completely away from the pipe. Then the



Receding Pipe Threading Machine.

threader can be pulled straight off the pipe, avoiding loss of time in unwinding. A single turn of either of three conveniently placed lugs disengages the lead screw, so that the head may be pulled back to the original position and reset. A three-jawed universal chuck guide is provided, and after the jaws are tightened against the pipe, one turn of a grip screw working inside of the chuck tightens the chuck so that it cannot slip. Adjustment may be made for cutting shallow or deep threads, by changing the setting of the lock nut and adjusting rods that project through the head of the threader.

The ratchet receding pipe threader, for use where space is limited is similar to the regular receding threader which has just been described. The ratchet mechanism represents the



Ratchet Receding Pipe Threader.

only change and it is incorporated right into the die stock instead of being made an attachment. The head is so designed that the pulling strain of the handles comes directly back of and in line with the chasers, thus minimizing the pull and preventing danger of trouble caused by twisting strains. The threader is made with two-handle lugs and two handles are furnished with the tool. When it is to be used with the ratchet mechanism, one of these handles is taken off and the tool will then swing in a 14-inch circle; but it is equally feasible to disengage the ratchet, screw the second handle into place in its lug, and use this tool just as the regular receding pipe threader is operated.

Easton, Pa.—F. Ricker, 312 Forry Street, has secured the contract to install the plumbing system in a $20,000 school in Wilson Township. J. J. Nosbit, 213 North Vermont Street, will install the heating system.

- WISECO -
TRADE MARK
EST. 1877 INC. INC. 1917

J.B. WISE. Inc.,

Manufacturers of Plumb Sa

The "Breaking-Down" Rolls

This operation reduces the brass bars to a uniform thickness

BRASS bars coming from the moulds are naturally more or less uneven in surface. They are taken to the shears where the overflow end is cut off. If "spilly metal" develops we continue to cut until the metal shows *absolutely clean.*

These bars are then ticketed and taken to the rolls for their first "break-down" as illustrated.

This operation consists of passing and repassing the bars through heavy steel rolls. The bars are thus reduced to a uniform surface.

You will note some of the bars of the truck are crooked but we easily take the crook out by passing the bars through the "bull-straightener"—a machine that is used only to make the bars perfectly straight and even.

"WISECO" Products

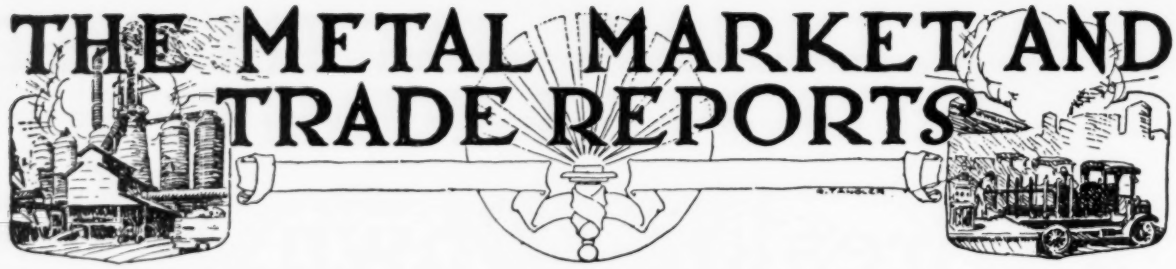
You are now passing through a department of the "Wiseco" Plants that is full of intense interest. Here there is a veritable din, the crashing of steel rolls, the grinding, clanking, thrashing of other machines, each of which plays its own special part in the making of "Wiseco" Products.

Every man, as well as each machine, has his own special duty to perform and to *perform it well.*

In the following issue of "Domestic Engineering" we will show what next happens to these bars of brass to render them perfectly free from foreign matter.

...Watertown, N.Y.
...Sanitary Brass Goods

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

There is not much improvement to be reported in the situation in the steel market. A meeting of the general committee of the American Iron and Steel Institute and the officials of the Railroad Administration was scheduled to be held on Thursday, May 8th, in New York, the outcome of which has not been announced at this time. That there will be further reductions in the prices is doubted by the best posted authorities, because it is generally known that the steel companies are not able to make reductions, and almost all of them would lose on any contracts for rails, which might be placed at the prices of the Industrial Board.

Plates and shapes are reported as being favored by the consumers, who are eager for small shipments in the near future, while pipe is in moderate demand. The market is not active, and buying is on a strictly hand-to-mouth basis. Just how soon conditions are likely to change is not predicted. There has been nothing done as to readjusting wages on the part of some of the independent interests, but it is admitted that conditions are serious with most of these producers.

The export situation is about the same as that which exists in the domestic market. Orders are few and many inquiries, which have been received in the trade, have not materialized because of conditions created by the factional war in Washington. The structural situation is reported better on the strength of more numerous inquiries. There can be no material improvement in the pig iron trade until there has been some settlement on the subject of prices and a further clearing up of the situation existing between the steel producers and the Government departments. Production is reported to be at a low ebb. In the South, it is stated, that there are more or less inquiries for tonnages on new bookings, but the percentages of these inquiries, which actually develops into orders, is small.

The coke situation is reported to be without material change. Conditions from a buying point of view are too dull to warrant orders other than those for which there is immediate need. Prices have shown but little change during the past few weeks, and the level for best grade prompt shipment, furnace, is ranging from $3.60 to $3.75 per ton.

Copper.

Orders for copper continue to be light, and the entire situation shows but little change. Producers have made very few alterations in the price of copper, and the present levels are expected to be maintained for some time at least. The situation from the producers' point of view is serious, and it has been stated that no attempt will be made to bring output below the present level of 40 per cent of capacity. The export situation offers no immediate hope for improvement. It is conceded that the signing of the peace treaty will bring about a definite change in the export situation, and, because of this, dealers are trying to figure out just where the United States will stand in relation to the Allies overseas, when it comes right down to supplying the needs of the Central Powers. The range of the market at the close of the week was quoted by the larger interests as from 15⅜ to 15½ cents per pound.

Tin.

The tin market remains about the same as when last reported. The allocated tin shipped to the United States Steel Products Co., through the Inter-Allied Tin Executive, is being liquidated at the fixed price of 72½ cents a pound, and, until this surplus is disposed of, it is not expected that there will be any improvement in the situation.

Lead.

The lead market went from bad to worse last week. In outside hands the price declined until on Saturday the quotation was 4¾ cents per pound. The American Smelting & Refining Co. continues to quote at 5 cents for New York, and 4¾ cents in East St. Louis. The outsiders maintain that there need be no hope entertained for improvement until the details of the Peace Conference have been definitely settled and the steel price situation has been cleared up.

Spelter.

This market followed much the same course taken by the lead market, and the reasons were in most cases the same. The price of spelter in New York was around 6¼ cents, and at East St. Louis 5.97½ cents.

Other Metals.

Quotations on other metals in New York are as follows:

Aluminum (in 50-ton lots)	29	cents per lb.
Antimony (Chinese and Japanese)	11	cents per lb.
Solder, No. 1	41	cents per lb.

New York Old Metal Market.

The following prices are current for old metals:

	Buying.	Selling.
Copper, heavy	12¾ to 13¼ cents	14 cents
Copper, light	11¼ to 11½ cents	12 cents
Brass, heavy	7¾ to 8¼ cents	9 cents
Brass, light	6½ to 6¾ cents	7½ cents
Brass, turnings	8 cents	8½ cents
Tea lead	3 cents	4 cents
Lead, heavy	4 to 4¼ cents	4½ cents
Zinc	4½ cents	5¼ cents
Solder joints	10½ to 11½ cents	12 cents
Mixed babbitt	5 to 7 cents	7½ cents
Cocks and faucets	10¾ to 11 cents	12 cents
Aluminum clippings	21 to 23 cents	24 cents
Tin foil	40 to 43 cents	45 cents
Pewter	35 to 40 cents	42 cents
Old sheet aluminum	19 to 21 cents	22 cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying.	Selling.
Heavy yellow brass	7½ to 8 cents	8½ cents
Brass, light	7 to 7¼ cents	8½ cents
Brass, medium	8½ to 8¾ cents	9½ cents
Red brass	13¼ to 13¾ cents	14½ cents

Cocks and faucets	11	to	11½	cents	12	**cents**
Copper, heavy	12½	to	13¼	cents	14½	cents
Lead, heavy	4	to	4¼	cents	4½	cents
Tea lead	3¼	to	3½	cents	4	cents
Zinc	4½	to	5	cents	6	cents
Solder joints	11½	to	11¾	cents	13	cents
Mixed babbitt	**5½**	**to**	**6½**	**cents**	**7**	**cents**
Aluminum clippings	22	to	23	cents	24	cents

The Pipe Market.

Quotations on less than car lots of full weight steel pipe are as follows:

	Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	43½	15½	.....	.....
½ inch	47½	31½	.....	.....
¾ to 3 inch	50½	35½	.....	.....
2 inch	.....	.....	43½	29½
2½ to 6 inch	.....	.....	46½	32½
7 to 12 inch	.....	.....	41½	26½

The quotations apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong steel pipe in less than car lots, quotations are as follows:

	Extra Strong				Double Extra Strong			
	Plain Ends Butt Weld		Plain Ends Lap Weld		Plain Ends Butt Weld		Plain Ends Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛, ¼ and ⅜ in.	34½	9½	.....	.....	.....	.....	.....	.....
½ inch	39½	14½	.....	.....	27½	.....	.....	.....
¾ to 1½ inch	43½	18½	.....	.....	30½	.....	.....	.....
2 to 2½ inch	44½	19½	.....	.....	32½	.....	.....	.....
3 inch	44½	19½	.....	.....	.....	.....	.....	.....
2 inch	.....	.....	36½	11½	.....	.....	25½	.....
2½ to 4 inch	.....	.....	39½	14½	.....	.....	27½	.....
4½ to 6 inch	.....	.....	38½	13½	.....	.....	26½	.....
7 to 8 inch	.....	.....	32½	7½	.....	.....	19½	.....
9 to 12 inch	.....	.....	27½	.....	.....	.....	.....	.....

With threads only, the basing discount is one and one-half points lower. With threads and couplings the basing discount is three points lower. The quotations apply to less than car lots.

Quotations on full weight genuine iron pipe, in less than car lots, are as follows:

	Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.
⅛ and ¼ inch	20½	+8½	.....	.....
⅜ inch	21½	+7½	.....	.....
½ inch	25½	5½	.....	.....
¾ inch	30½	12½	.....	.....
¾ and 1 inch	30½	12½	.....	.....
1½ inch	30½	12½	.....	.....
2 inch	.....	.....	23½	7½
2½ to 6 inch	.....	.....	25½	10½
7 to 12 inch	.....	.....	20½	5½

These quotations are f. o. b. Pittsburgh, and apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong genuine wrought iron pipe, with plain ends, and in less than car lots, the quotations are as follows:

	Extra Strong				Double Extra Strong			
	Butt Weld		Lap Weld		Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	14½	+10½	.....	.....	.....	.....	.....	.....
½ inch	19½	+5½	.....	.....	.....	.....	.....	.....
¾ and 1 inch	25½	½	.....	.....	.....	.....	.....	.....
1¼ inch	25½	½	.....	.....	.....	.....	.....	.....
1½ inch	25½	½	.....	.....	.....	.....	.....	.....
2 inch	.....	.....	19½	+5½	.....	.....	.....	.....
2½ to 4 inch	.....	.....	21½	+3½	.....	.....	.....	.....
4½ to 6 inch	.....	.....	20½	+4½	.....	.....	.....	.....
7 to 8 inch	.....	.....	10½	+14½	.....	.....	.....	.....
9 to 12 inch	.....	.....	5½	+19½	.....	.....	.....	.....

These retail prices are f. o. b. Pittsburgh, and apply to all quantities except in car lots. With threads only, the basing discount is one and one-half points lower. With threads and couplings, the basing discount is three points lower.

To ascertain the price in your city, deduct the proper less-than-carload freight rate from Pittsburgh to that city. Example: Base price on ¾-inch black steel pipe is 50½ per cent, Pittsburgh, the less-than-carload rate to Patson is 17 cents, and the price, therefore, freight allowed to Patson, 48$\frac{5}{10}$ per cent; on galvanized, 33$\frac{5}{10}$ per cent. All other sizes to be figured on a comparative basis.

BUSINESS CONTINUES STEADY IN LAST WEEK OF VICTORY LOAN.

Sentiment Prevails That Building Should Continue to Improve As Conditions Are Gradually Restored to Normal.

Chicago, May 7.—A number of factors contribute to the feeling prevailing in Middle Western circles that the month of May will see an ending of the hesitation and uncertainty that have marked business conditions for some time. The Victory Loan, which will end this week, and from all indications in a manner satisfactory to the people, the Government and the banks, will be out of the way. Peace terms have been submitted to the German delegates at Versailles. A resumption of the conferences on steel prices between the representatives of the steel industry and members of the Railroad Administration is scheduled for this week, and decisions may possibly be reached before this issue is off the press. All these activities point to but one thing—a stabilization of conditions, the substantiation of confidence in prices for 1919—in other words, a settling-down movement, the need of which is felt everywhere.

Building, for which the country has waited so long, has certainly made a start. A perusal of the daily building reports shows that permits are not being confined to the smaller structures. Work is going ahead on many structures running into hundreds of thousand of dollars—some into the millions. Building expenditures and engineering contracts for the month of April, according to Government figures, advanced 40 per cent over those of March.

There has been much talk in Chicago of the high cost of cement, but investigation has shown that it is not out of proportion to the costs of manufacture. Realizing this, it is encouraging to note, the State Department of Public Works has let contracts for 650 miles of road building. Director of Public Works Frank I. Bennett has authorized this work to go ahead, approved by Gov. Frank O. Lowden because of the big demand for road building and the necessity of employing labor. The opinion prevails that the state officials recognize that prices will be firm for some time to come and that it is unwise to hold off indefinitely, when there is need for such projects. The cost averages about 40 per cent higher than pre-war prices, of which 10 per cent is due to freight increases, while an additional thickness of concrete has been provided. These prices are below the average prices for similar roads, contracts for which have been let in recent months in other states.

So far as the plumbing and heating field is concerned, there is practically no change. Buying continues to be conservative, and prices remain as a week ago. If any improvement at all is noticed, it would be attributed to country business, which seems to be picking up a little faster than locally. Reports from architectural circles reveal a continuance of busy days, and figures are in active demand.

So far as the building material market is concerned, no changes of importance are noted in the Middle West, except that reports from St. Louis mention reductions in

the prices of select red brick and hard backing brick of $2 per thousand, in each quality. This is in addition to similar reductions which have taken place during recent weeks. In the lumber market reports indicate that it is stronger now than it has been since the close of the war, and applies to all sections of the country. Shingles have advanced in price. The general demand for lumber is strong, and stocks are scarce. As a whole, this strength is attributed to the general resumption of building activity.

Any manufacturer, jobber or retailer will tell you, if you enquire about the future of business and how soon it will go ahead with satisfaction to all, that his guess is as good as the other fellow's, nevertheless all are working hard to bring about that condition, and with this feeling dominant the general tone of business is optimistic, and there is evidence that there is a solid foundation for such a condition.

RESTORATION OF TRANSPORTATION PRIVILEGES HELPS LARGER CONSTRUCTION WORK IN NEW YORK.

Free Lighterage System Reduces Cost of Bulky Building Materials Delivered on the Job.

New York, May 7.—In the building field generally, in New York, conditions are assuming a brighter aspect, and it is the consensus of opinion that the time is not far off when this part of the country, as well as other sections, will be participating in a resumption of construction in all lines. In this vicinity one of the principal hindrances has been the matter of restoring the free lighterage system which has helped, in former times, to keep down the delivered-on-the-job cost of materials. The Federal authorities have been brought to a realization that all the co-operation among distributors in the matter of getting prices back to acceptable levels would avail little, unless bulky building materials could be assured of this important transportation facility, which had been denied them as a war measure. This restriction was lifted late last week, and dealers lost no time in getting their applications for permits in shape for presentation to become operative as early as possible. This will have the effect of encouraging an immediate resumption of construction plans for large structures such as loft and hotel buildings, which has been much desired by owners and those in dire need of such quarters.

On the other hand, the continued lack of financial aid for the equally necessary cheaper and medium class of flat and apartment buildings restricts any great forward movement. The activity in smaller residences in outlying sections continues somewhat spotty, but is steadily improving. Architects are busy with new plans, and many drawings made some time ago are being resurrected from their files.

Inquiries are becoming more numerous, and the feeling prevails that business will profit in proportion to this increase. So far as buying is concerned in the plumbing and heating field, purchases are largely confined to the hand-to-mouth variety, but in greater volume, though jobbers are not stocking up to any extent in the various lines that are in demand.

"Economy is near to the keystone of character and success. A boy that is taught to save his money will rarely be a bad man or a failure; the man who saves will rise in his trade or profession steadily; this is inevitable."—Gladstone.

BRITISH STEEL MANUFACTURERS CONCERNED OVER CUT IN AMERICAN PRICES.

The news of the recent cut of $4.25 in American prices for pig iron and of $12 on finished steel is causing anxiety to steel manufacturers in England. At the revised prices, four-inch billets bring $38.50 per gross ton in America while the British figure is about $61.50, practically half again as much. The American price for galvanized sheets amounts to about $105 per ton, the British about $140.

According to reports received from the American Chamber of Commerce in London, British steel manufacturers see their overseas trade threatened and even their domestic markets prejudiced by this discrepancy in prices.

They have reason to be disturbed because import merchants are watching the situation closely and probably only the heavy freights are averting an immediate flow of American raw steel into British works.

The export problem is even more acute. Great Britain with the freight against her in addition to her already higher prices cannot hope to put steel on the Canadian market for instance at a price which will compete with the American. And having doubled her steel making capacity during the war, the loss of overseas, and even colonial markets, at this time would be a great blow.

Moreover, at the end of April the Government removed its subsidy from pig iron and the price is expected to advance about $5 per ton, which will raise the price of steel $10 to $15 according to the work done on it. As a result sellers cannot quote prices for future business, and buyers of the semi-finished material will not engage on contracts because they cannot tell what the steel is going to cost them. Business is slowing up.

The fact that the city of Birmingham should have placed a large order for street car rails with an American firm has evoked comment and when explained the answer makes British business none the happier. Bids were asked. Only three were received—two British, one American. Other British manufacturers were approached but none could handle the contract. Of those submitted, the American was most favorable both in price and guarantee of delivery.

The Birmingham instance typifies the position, and agitation is already seen in some quarters for import restrictions on steel to protect those manufacturers who having placed their resources at the disposal of the British government during the war are now unable to fill all orders.

Obituary

Alfred Spear.

Alfred Spear, for twelve years with "The Plumbers' Trade Journal" and for the past five years central western manager, with headquarters in Cleveland, Ohio, died at his home on Saturday, May 3rd. He was well liked in the trade and his untimely death is deeply regretted by the plumbing and heating fraternity. He had been in poor health for some time and was in the Battle Creek Sanitarium for several weeks shortly prior to his death. He was about 55 years old and his home was in Troy, N. Y. He is survived by Mrs. Spear and a son and daughter, both of whom are grown up, the daughter being married, while his son is in college studying medicine.

AMONG THE PLUMBING AND HEATING CONTRACTORS

Illinois

Chicago and Vicinity.

John Degnan, 631 South La Salle Street, will install the plumbing system in a $4,500,000 warehouse for Butler Bros., at Washington, Randolph and Canal Streets.

Kohlbry Howlett Co., of 111 West Washington Street, has been awarded the contract to install the heating and plumbing systems in a $2,000,000 warehouse to be built on Thirty-ninth Street, near Robey, for the United States Government.

M. J. Corboy Co., of 178 West Randolph Street, will install the plumbing in a $500,000 factory for the Melville Clark Piano Co., at Kedzie and Forty-eighth Street.

Barrett & McCall, 154 West Randolph Street, were the successful bidders for the plumbing equipments to be installed in a $150,000 tank house to be built at Forty-first Street and Union Avenue, and in a $40,000 factory to be built on Twenty-second Street and Fifty-fourth Avenue.

Robert Gordon, Inc., of 622 Monroe Street, will install the heating system in the first unit of a factory, costing $200,000 for the Conlon Electric Washer Co., on Fifty-second Avenue, between Sixteenth and Ninteenth Streets, Cicero.

Johnson Bros., of 1419 Belle Plaine Avenue, have secured the heating contract on a $20,000 store and office building to be built at 358 North Laramie Avenue.

H. F. Wessle, 2014 South Leavitt Street, has been awarded the plumbing contract for a $20,000 factory at Clybourn Avenue and Lewis Street. A Baker, 3537 Lincoln Avenue, will install the heating system.

O'Callaghan Bros., of 157 North Market Street, have secured the contract to install the plumbing system in a hotel to be erected at Clark Street and North Avenue for the Plaza Hotel Co.

Charles J. Eisentraut, of 2014 North Oakley Boulevard, will install the plumbing in a $11,900 store and flat building and garage to be built at 2081-2083 North Hoyne Avenue.

B. H. Crosby, of 4629 Prairie Avenue, has been awarded the heating contract for a $30,000 storage house to be erected at 4046 Michigan Avenue for the La Salle Extension University. Frank Winkler, of 841 North State Street, will install the plumbing system.

Alfred Jones, of 9212 Commercial Avenue, will install the plumbing system in an $80,000 power house and engine room to be built at 108th Street and Calumet River.

William J. Lang, of 7 West Division Street, has secured the contract to install the plumbing system in the $90,000 factory addition at 2535 Sheffield Avenue.

Glennon-Bielke Co., of 546 West Lake Street, has been awarded the contract for the installation of a heating system in a $15,000 residence and garage at 4914 North Kimball Avenue.

Noble & Thumm, of 2313 Lincoln Avenue, will install heating and plumbing systems in the $20,000 store and office building, being built at 4033-4035 Irving Park Boulevard.

M. J. Downs, of 5538 South Racine Avenue, was the successful bidder for the plumbing equipment to be installed in fifteen new bungalows at Fifty-ninth, Throop and Bishop Streets.

E. Stevenson, 6142 South Western Avenue, has been awarded the plumbing contract on a residence to be erected at 5944 South Sacramento Avenue.

F. Fahlstrom, 446 East Seventy-sixth Street, was the successful bidder for the plumbing equipment to be installed in a $5,000 bungalow to be built at 7219 Prairie Avenue.

Herman Mittag, 2844 North Cicero Avenue, has secured the plumbing contract for thirty residences, to cost from $3,000 to $6,000 each.

L. J. Keefe, 6515 North Clark Street, has secured the plumbing contract on a store to be built by Grossman Bros., at the northwest corner of Ashland and Lincoln Avenues.

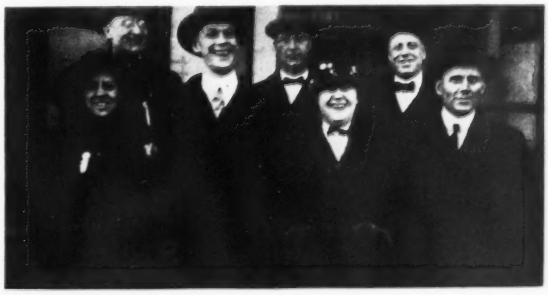
Wm. Gawne, Jr., 5812 Madison Street, has the plumbing contract on the $15,000 garage of the Moody & Waters Co., to be erected at Aberdeen and Congress Streets.

N. B. Brown, 19 South La Salle Street, will install the heating system in six bungalows to be erected at 5436-5450 Flournoy Street.

Iowa

Stephen Bros., of Council Bluffs, will remodel the heating and plumbing systems in the store building at 17 Pearl Street, for Thomas D. Metcalf & Co.

Bids are being taken for sub-contracts on the Washington Machine Factory and the office building of the White Lily Washing Machine Co., to be erected in Davenport. One unit contract has been awarded and six are contemplated. The estimated cost is $15,000 and $150,000.



The Fort Dodge Delegation at the Cedar Rapids Convention of the Iowa Master Plumbers' Association.—From "Domestic Engineering" Photo. The Fort Dodge Association will entertain the Iowa Master Plumbers and their Ladies at the 1920 Convention. That's Why the Delegates Smile.

Georgia

Atlanta and Vicinity.

W. H. Wynne, of the Wynne Plumbing & Heating Co., is building three eight-family apartments on North Avenue. There will be five plumbing fixtures in each of the apartments. The steam heating will be furnished by one boiler. The Wynne Plumbing & Heating Co. will do all the work in its line.

H. H. Dean, of Gainsville, has purchased one of the sky-scraping office buildings in Atlanta and is converting it into a modern hotel. Homer Kilpatrick is remodeling steam, gas and plumbing systems in the structure.

Boatenreiter Plumbing Co. has secured the contract to do the plumbing and furnish garbage consumers in four apartments now being built on Wabash Avenue.

Ford Plumbing & Heating Co. has a contract to remodel the plumbing and heating in a building at 113 East Cain Street.

Flourney Plumbing Co. has secured the contract for the plumbing in six apartment houses on Lyons Avenue.

Capitol Plumbing Co. has the contract for plumbing in two apartments on Old Wheat Stand and in two dwellings on Stewarts Avenue.

Landers Plumbing Co. has been awarded the contracts for installing plumbing in residences at 87 Rogers Avenue, 396 Auburn Avenue, 38 Oakdale Avenue and for remodeling the plumbing in the residence at 516 North Boulevard.

Mitchel Plumbing Co., of Decatur, has secured the contracts for plumbing in the following houses in Atlanta: 10, 51 and 65 Virginia Avenue; 11 St. Charles Avenue; 213 North Mooreland Avenue, and 68 and 72 Matthewson Avenue.

J. H. Lynch, the popular plumber is now building a residence for himself at 78 Virginia Avenue, in one of Atlanta's new and popular sub-divisions, where a fellow may have all of the city conveniences and live in the country. He also is doing the plumbing in two houses on Elmwood Drive; 139 Gordon Street, and 210 North Jackson Street.

Jennings-Gresham Co. has the contract for remodeling the plumbing and heating systems in the Fourth National Bank Building. This is a larger job than it sounds and will require something like twelve months to complete. This company also has several other jobs including one at 386 Hilliard Street.

Franklin Plumbing & Tinning Co. will install modern plumbing in residences at 92 Park Avenue and 675 Whitehall Street.

Belcher Heating & Plumbing Co. has the contract for the plumbing in the modern home now being built at 154 Greenwich Avenue.

Independent Plumbing Co. has secured the contract for the plumbing in the houses being built at 499 Crew Street; 34 Kennesaw Avenue; 75 Highland View; 38 South Pryor Street, and 147 North Boulevard.

H. T. O'Shields, erstwhile owner of the Mell Plumbing Co., after 30 years of close attention to his business, has sold the controlling interest in the Mell Plumbing Co. and will devote the major part of his time to farming, coming to Atlanta just frequently enough to insure the same high standard of work and the same efficiency that has made the Mell Plumbing Co. famous for square dealing.

Piedmont Plumbing Co. has been changed to Peachtree Plumbing Co., J. B. Grant having sold his interest to Howard Hunt and accepted the position of manager of Atlanta's newest skyscraper, the Transportation Building.

Mappin Bros. Co. will remodel the plumbing in residences at 160 East Pine Street and 131 Capitol Square, and install plumbing in new residences at 5 Highland Avenue and 176 Dill Avenue.

For some time Atlanta has been confining her permits to bungalows, apartments and stores and a few dwellings and homes thrown in for a change, but now comes the owners of the Ansley Hotel with the announcement that they will make a $2,000,000 addition to their present hotel.

Harvey Coleman has sold his interest in the Decatur Plumbing Co. to his partner, Charlie Blackstook, who is now sole owner.

Kentucky

Louisville and Vicinity.

The Kentucky Association of Master Plumbers has arranged to hold its fifteenth annual convention at Lexington, Ky., on May 19th and 20th, after having changed dates that conflicted with the Spring races. The meeting will be held at the Phoenix Hotel, and delegates from various sections of the state and Louisville will probably motor to headquarters. The convention this year calls for three business sessions, one at 11 o'clock of the morning of the opening day, and another at 2 o'clock that afternoon. The third and final session will be held at 9 o'clock on Tuesday morning. A theater party will be given on Monday evening, and an auto trip through the beautiful Bluegrass districts around Lexington will be the entertainment feature on Tuesday afternoon. No regular set program has been announced, the sessions being planned along the lines of general discussions. D. H. Roberts, of Cleveland, will be present as representative of the National Association of Master Plumbers.

Mayor Smith of Louisville last week re-appointed the Louisville Board for Examining Plumbers. Under the state law this board must be appointed each year to serve from May to May. However, there is a disagreement concerning the present board. Under the law the board must be composed of two master plumbers, two journeyman plumbers, and the city plumbing inspector. The board is now composed of the following members: F. H. Scott, chairman and city plumbing inspector; George Schardein and W. H. Matlack, masters; William Rupp and Charles Coalter, journeymen. However, Mr. Coalter is now operating a shop of his own and is a master plumber, and not a journeyman. Mr. Coalter contends that as he is doing his work from a shop at his home, he is a journeyman. However, in the eyes of the law a man who is operating a business of his own for profit is not a journeyman. Webster's Dictionary defines a journeyman as "one who has mastered a trade." However, when a journeyman who has mastered a trade goes into business for himself, and deals directly with the consumer, he becomes a master and, according to local plumbers, Mr. Coalter is not eligible as a journeyman member of the board.

W. H. Matlack, of the Examining Board of Louisville, reports that over ninety examinations have been made and licenses granted journeymen to operate in Louisville. The board meets to give examinations every Saturday afternoon, and again on Thursday evening, when decisions are rendered on the previous examinations.

Although the licensing ordinance, under which many business concerns and professional men were to pay licenses to

make up a deficit, which will result from prohibition, was amended to lift the burden in many cases, the plumbers will pay a license of $25 a year to conduct their business under the terms of the ordinance as finally passed.

Business with the Louisville master plumbers has been a little quiet during the past weeks, but is showing steady improvement. Many millions of dollars of work are projected, and the architects and engineers have much business on paper. Although the big projects are very slow in materializing, some of the supply dealers and contractors claim that they will have a heavy volume of business on hand by late June.

Depositions of Louisville plumbers, members of the Louisville Master Plumbers' Association, are being taken at the rate of about six a day in connection with proving a point of law in the Meyer case, in which P. H. Meyer alleged that the plumbers failed to co-operate with him in handling the Camp Taylor contract. The case was settled in favor of the members of the association by pre-emptory instructions to the jury, but there were one or two matters concerning law in facts that had to be cleared up.

The Louisville Master Plumbers' Association is meeting regularly, but without taking up any matters of especial interest or action of any sort. These meetings are given over principally to discussion of conditions, and outlook for business. Many of the members are feeling very optimistic concerning the outlook.

The Knights of Columbus will erect an addition to their home on East Third Street, Newport, Ky., at a cost of about $25,000. It will be a modern brick structure, and work is expected to be started the latter part of June or the early part of July.

New York

Buffalo and Vicinity.

W. A. Wilson, 1844 Seneca Street, recently installed plumbing systems in twenty new houses for John T. Burke, and has been awarded the contract for similar work in thirty-four new residences to be erected soon.

Jerome W. Cline has opened a new plumbing and heating establishment at 766 Seneca Street.

Part of the Manhattan Delegation at the recent Buffalo Convention of the New York Master Plumbers' Association.—From "Domestic Engineering" Photo.

The Chippewa Plumbing Co., 88 Chippewa Street, has completed the installation of the plumbing system in the new Seventh Street School.

Rodgers Plumbing Co. has installed the plumbing system in the Niagara Hotel. This company has extended its business to include the selling of auto sundries and tires.

The Breshmann Plumbing Co. has been awarded the contract to install plumbing and heating systems in the Presto Light Plant.

J. A. Martin, of Lancaster, is installing plumbing and heating systems in Dr. Staton's residence and in the Bank of Lancaster.

George Drake, chairman of the Liberty Loan Committee, reports that of the $455,000 quota assigned to the contractors, manufacturers and jobbers of the plumbing and heating trade, $350,000 was subscribed during the first week. At this rate they surely will go over the top.

Other Cities in the State.

Peck's Hardware & Plumbing Co., of Hornell, has been awarded the contract for the installation of the plumbing system in the Edward Terris residence.

G. H. Weatherby, of Addison, has completed the installation of modern plumbing systems in one of Addison's well known confectionery stores and in the residence of Mrs. Kate Buck.

J. J. Vogt & Son, of Dansville, have had a good winter season and expect much new work during the summer. Mr. Vogt's two sons have been in the service.

Stiles & Kellog, of Mt. Morris, report good prospects for the coming summer.

Henry Seibert, of Avon, has been working on the S. J. Macey residence, installing heating and plumbing systems. He has just completed work on the steam heating plant in the Avon High School and is figuring on a contract for the New St. Agnes Church.

John F. Smith, plumbing inspector of Jamestown, recently submitted his annual report to the local board of health. The report showed that Mr. Smith had approved 241 plans, tested 250 plumbing systems, made 295 final inspections and approved the installation of nearly 1,000 plumbing fixtures.

Ryan Bros., of Le Roy, installed a hot water supply system in J. Maloney's residence and a heating system in the Le Roy Library.

Young's Hardware Co., of Geneseo, has recently completed several large contracts for plumbing and heating, including one in the building of the Retsof Mining Co. Mr. Young looks forward to another big year, last year being an unusual one in the heating line. He is looking forward to the return from service of Walter E. Smith and Joseph Fishbaugh, two of his plumbers.

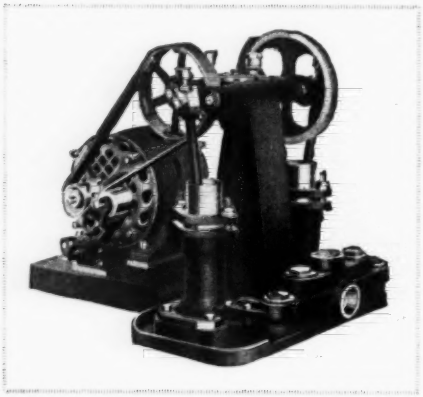
William C. Warren, of Cuba, has secured contracts for remodeling the plumbing in several residences.

P. G. Manion, of Wellsville, has been awarded the contract for the installation of plumbing in the new $35,000 Babcock Theater in Wellsville, and in the F. D. Rice residence.

The Dietricks Hardware Co., of Salamanca, has been awarded the contract for the installation of plumbing in several residences in that city.

W. H. Simpson, Inc., of Olean, is installing a steam heating system in the State Armory at Olean, and vapor heating and plumbing systems in the Filtration Plant. They also have the contracts for the plumbing in ten houses being erected by the Olean Real Estate Co., and the plumbing and heating in the new shops of the Wilson Engles Co. at the Gardenville Engine Yards. The latter contract amounts to $30,000.

THE B&B LINE



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The B & B Electric Return Line Vacuum Pump shown above is a complete automatic working unit. Construction is exceedingly simple—no small or complicated parts to get out of order. Positive acting. Works so perfectly with its double speed reduction, that the power required to operate is only about one-third to one-fifth as much as other pumps.

The B & B Line is the largest of its kind in the world. It embraces the following:

B & B Air Line System
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Economy in any heating plant is obtained only by an efficiently operating system. Bishop & Babcock Specialties have proven to give that efficient service in all cases, whether in old or new plants, in residences, sky scrapers or central plants with buildings widely scattered.

Write for details and prices, and blueprints of typical layouts of various systems.

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Massachusetts

Boston and Vicinity.

Huerkel & Co., Union Park Street, will install the heating system in the new banking quarters of the Massachusetts Hospital Life Insurance Co., at 59 State Street.

J. P. Perry & Co., 276 Devonshire Street, have been awarded the contract to install a modern plumbing system in the Aetna Life Insurance Co.'s office building at 50 Congress Street.

Thompson & Spear Co., 134 Milk Street, has the contract to install plumbing equipment in the $12,000 garage to be built on Commercial Street, Provincetown, for Paige Bros.

J. J. Hurley, 104 Broadway, South Boston, will install the heating system in the Needham Tire Co.'s new factory to be built at Charles River Station, Needham.

James F. Stevens, doing a plumbing business at 1176 Boylston Street, Boston, has filed a petition in bankruptcy.

Edward H. Gregory, a plumbing and heating contractor of 880 South Water Street, New Bedford, is building a two-family house for himself at the corner of County and Fair Streets, at a cost of $17,000.

Other Cities in the State.

There is quite a boom in building in the towns of Webster and Dudley, contracts for dwellings, schools, roads and repair work already let aggregating more than $300,000. Bids have been asked for the general contract and for the plumbing and heating in connection with a $65,000 school house addition.

William A. Bradford, the well-known master plumber of Quincy, plans to spend between $15,000 and $20,000 for alterations to a store and office building owned by him at the corner of Maple and Chestnut Streets, Quincy.

Plans are being drawn for an apartment house to be erected at Lynn to accommodate 80 families. It will be located on the Shore Drive, will be owned by Josiah Broceman, and will cost $250,000.

The heating and ventilating contract for the new Woodville school house at Wakefield, has been awarded to the Stone-Underhill Co., of Boston. The award is conditional upon the ability of the committee to complete the building within the appropriation of $52,000.

The city property committee of Springfield has called for bids for plumbing in a large addition to the Forest Park School in that city. Bids must be received before 4 o'clock on Thursday afternoon, May 22nd, and the committee reserves the right to defer awarding the contract until June 24th.

P. J. Barrett, of Adams, has the contract for installing a new heating plant in the garage of Henry F. Barrett in that town.

Plumbers in Rutland and other high altitude towns in central Massachusetts had their last rush of calls for thawing out water pipes on April 25th. The temperature went considerably below freezing during the night, and pipes in outbuildings and other exposed places were frozen, and made it necessary to call plumbers.

Twenty-nine applicants for master plumbers' and journeymen's licenses appeared before the state board of examiners of plumbers at a meeting held in Worcester, April 23rd. During the forenoon there was a written examination, and the remainder of the day was devoted to practical demonstrations.

Connecticut

Contracts for a new fire station at Waterbury have recently been awarded. The plumbing was awarded to M. J. Daly & Sons, Inc., at $2,591, and the heating to the same firm at $2,426.

A large amount of new building is under way at Bridgeport. Contracts have been let for a new parochial school building for St. Michael's Polish Roman Catholic Church to cost $150,000. Architect E. B. Caldwell has just completed plans for a four-story brick business building on Main Street for the Bridgeport Christian Union, and plans are being prepared for a bank and office building at 893 Main Street for the American Industrial Bank & Trust Co.

Architects Cudworth & Thompson, of Norwich, are preparing plans for a $200,000 building for the Norwich Hospital for the Insane.

At Waterbury plans are being completed for a new school house to be built in the rear of the present Crift Street School. The structure, it is estimated, will cost about $125,000.

The controversy between the city of New London and the United States Housing Corporation, regarding the style of traps to be installed in Government houses in that city, is still unsettled. The housing officials have said they would nail up the houses, which are 90 per cent completed, if the matter is not soon adjusted.

Frank I. Jones, proprietor of the Heating & Plumbing Co., of Norwalk, has leased a store in the new Roodner Block soon to be erected on Wall Street, Norwalk.

St. Paul's Church at Willimantic is soon to install a new heating plant. The money for the work has been raised among the members of the Parish.

Pagnam & Heslim, who conduct a plumbing, heating and tinsmithing business at Wallingford, have added an automobile service station to their business.

Pennsylvania

Harrisburg.

A bill has been introduced in the Pennsylvania legislature by Senator Tompkins, which would amend the regulations governing the installation of plumbing work in cities of the second class by permitting the use of terra cotta pipe for house drains inside the building line under the cellar floor. Among other specifications governing the construction of such lines, the bill provides that the joint must be an approved poured joint of cement grout or a bituminous compound.

Considerable opposition to the passage of the amendment was made by sanitary engineers, master and journeyman plumbers at a public hearing at Harrisburg. They maintained that the poured joint, which was developed and perfected through war necessity, is the only valid reason for the proposed use of clay pipe and does not warrant changing the plumbing code.

The proposed change, which is included in Senate Bill No. 676, specifically provide, in Section eight, as follows: "Material for House Drains: Where the ground is of sufficient solidity for a proper foundation or where in made ground

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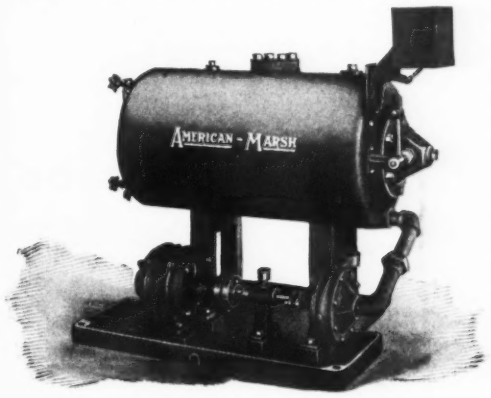

For use in returning the condensation to the boiler on heating systems where the steam pressure is too low to operate a steam pump. Water is returned to the boiler in its hottest state. Equipped with an automatic float valve which is positive and reliable. We also make a specialty of steam and motor driven vacuum pumps.

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Toilet Compartments

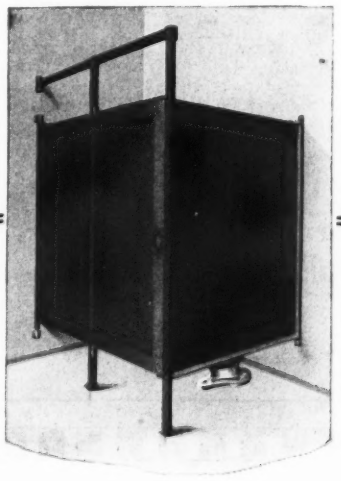
have every requirement for sanitation.

Partition formed of one sheet of rigid steel in neat design, with interlocked and welded joints to hollow metal posts. No projecting set screws, bolt heads, etc.

EASY TO ERECT

Once installed, these partitions form a part of the permanent equipment. No repairs or upkeep expense whatever.

A logical line for the plumber to handle. While installing the plumbing fixtures, why not finish the job by putting up the partitions?



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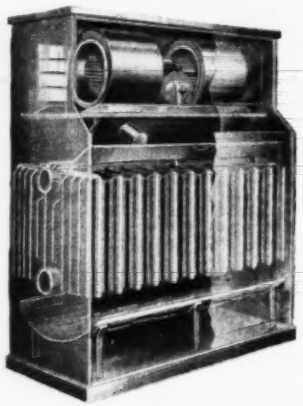

A light, easy job appeals to most men, especially if the pay is better than ordinary.

In the same sense, a light, easy installation of a Heating and Ventilating system appeals to the heating contractor—especially if there is better profit for him.

The UNIVENT installation can be made with fewer men, in less time, with less actual labor than with any other system—and the ultimate profits are greater—and your client is completely satisfied.

It is good sound business for you to obtain a good working knowledge of the UNIVENT—the most efficient ventilating system in America today.

This system is successfully operating right now in hundreds of buildings of all kinds.

Some valuable territory still open for good sales representatives.

It ventilates better as it heats better.

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a four-inch concrete slab is used, cylindrical terra cotta pipe of the best quality, free from flaws, splits or cracks, perfectly burned and well glazed over the entire inner and outer surfaces, may be used, if laid on a smooth bottom with a special groove cut in the bottom of the trench for each hub in order to give the pipe a solid bearing on its entire length and the soil well rammed on each side of the pipe. The space between the hub and pipe must be thoroughly filled with a strand of hemp and a cement grout made of equal parts of the best cement and bar sand thoroughly mixed dry and enough water added to give the proper consistency or an approved bituminous compound, and must be an approved poured joint, but the terra cotta pipe must not extend nearer than eighteen inches to the soil or waste risers nor nearer than two feet along side a foundation wall, nor less than one foot below the floor. All drains or soil pipes connected with main drain, where it is above the cellar floor, shall be of extra heavy cast-iron."

The bill provides that where such terra cotta pipe is used, the diameter shall be one size larger than cast-iron specifications for the same amount of area drainage.

Where a terra-cotta main trap is used it must be embedded in and surrounded by not less than four inches of concrete, and cleanout ferrules properly anchored into the concrete.

Under Inspection, Section 67 proposes that a preliminary water or air test shall be applied, stating that "The house drain may be tested with a ten-foot head of water or a five-pound air pressure."

Philadelphia and Vicinity.

The Philadelphia Steam Heating Co. has been awarded the contract for the installation of plumbing and heating systems in the new Recreation House being constructed in Fairmount Park.

M. J. Morgan has secured the contract to install plumbing systems in thirty-four houses now in the course of construction.

B. Landau, of 1216 North Fourth Street, has been awarded the contract to install the plumbing system in a new apartment building to contain twenty-seven modern bath rooms, and for similar work in the new Turkish Bath House, to be erected on North Seventh Street

W. G. Cornell & Co. have secured the contract to install the plumbing system in the large department store being built at 927 Market Street, for L. W. Hirsch & Co.

O. E. Goldschmidt, of Philadelphia, has been awarded the contract for the installation of plumbing and heating systems in the new hotel, which is soon to be erected for the United Hotel Co., at Bethlehem.

Pittsburgh and Vicinity.

According to the April building report compiled by H. W. Minnemeyer more permits for building in Pittsburgh were granted than in any previous month in the city's history. Total permits were 537, the nearest approach to that figure having been in April, 1910, when 528 permits were authorized. At the inspector's office last month the rush was so steady that all applications could not be acted upon, and some of them will appear in the report for May. The city engineer has permits piled on his desk to be passed upon for work to cost a total of $140,000, and permits ready for issuance represented a total of $275,000, while the plan examiner had $74,000 worth of permits to pass upon, making a grand total of $489,000 worth of work that will have to be included in the May report.

With evictions on May 1st, causing a great deal of distress in the city, a big demand has been made throughout the Pittsburgh district for an immediate building boom. City councilmen, Mayor E. V. Babcock, leading real estate men and contractors have joined the movement, and one

of the most insistent voices in the general chorus is Secretary E. M. Tate, of the Builders' Association. President H. R. Roberts, of the Pittsburgh Real Estate Exchange, said: "There is no doubt as to the advisability of building now. Houses are not to be had and storage room for goods is about exhausted, I am told. We have never witnessed such conditions before, although we realized it was coming." Secretary Tate said: "All the statistics, we have had, have been to the effect that prices will not decrease to any great extent, if at all. Anyone thinking of putting up a building will be wise to go ahead with the project. A cut in the price of materials and labor is hardly to be expected. The situation is most acute."

A large building at Atwood Street will be remodeled into a commercial garage for Abraham Goldbloom. The total cost of this work is estimated at $50,000.

Golden & Crick have the contract for the erection of a row of four stores and apartment buildings to be erected on Murray Hill Avenue, near Forbes Street, at a cost of about $25,000, for the Diebold Investment Co. Subcontracts will be awarded in a few days.

District of Columbia

Washington and Vicinity.

Isadore Freund has secured the contracts for the installation of plumbing systems in the Meridian Apartments on Sixteenth Street, Senator Wadsworth's new residence and also in the International Association Machinists' Office Building.

A. H. Douglas, 217 Oxford Building, has finished the installation of the heating system in the ten-story Barr apartment building.

A. R. McGonegal, chief plumbing inspector of Washington, is proudly flying a service flag of eleven stars, one of which is gold, for members of his office force. Chief McGonegal is a Spanish War veteran.

W. E. Pookhultz, 817 G Street, N. W., has been awarded the contract for the installation of the plumbing system in a $65,000 residence to be built at 4606-4624 Fifteenth Street. J. C. Beard, 931 Longfellow Street, will install the heating system.

Ohio

Cincinnati and Vicinity.

In the past few months the erection of new buildings in Cincinnati has been practically at a standstill. With the advent of real spring weather the situation is brightening up considerably, and, judging from the projects being started, the plumbing and heating business should experience something more like normal conditions. The high prices of building materials and labor continue, and the fact that the builders are sure of no immediate decline in prices has caused the long-looked for spurt.

Commodore W. C. Eaton, inspector of engineering materials for the Navy in Cincinnati, has received his second retirement papers. He was retired while doing similar work in 1908, but was recalled into the service at America's entrance into the war, and was placed in charge of the Cincinnati office. Commodore Eaton has been in the service of the Navy for 47 years. Lieutenant Serkowich will assume charge of the Cincinnati office.

ARE YOU OVERLOOKING THIS OPPORTUNITY?

Now that home building has revived with a vast amount of remodeling planned and already started, why not specialize in the selling and installing of

The "MINNEAPOLIS" HEAT REGULATOR

This device offers a source of splendid profit and you are selling every customer absolute satisfaction.

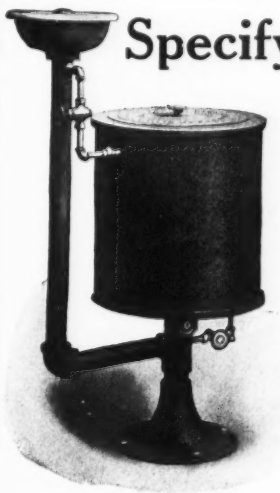
The comfort and convenience of a Minneapolis Heat Regulator finds its strongest endorsement in the fact that "everyone who has one would not live in a home without one."

Get in touch with our Sales Dept.

Let us help you "put over" every prospect.

Minneapolis Heat Regulator Company
General Offices & Factory
Minneapolis Minnesota

Specify Sanitary Bubbling Fountains



For Factory and Office Buildings

They Increase the Efficiency and Health of the Employes

Hundreds of America's largest concerns have their plants equipped throughout with these fountains in numbers running as high as 120 in a single installation. These fountains are for attachment to the municipal supply; are cork-jacketed, have 15½ coils of ½-inch brass pipe and will supply 150 persons. Many types for use with bubbler or glass with both or either.

Write for Catalogue

Covering our line of Wash Bowls, Metal Lockers, All Steel Stools and Chairs, with Inset Wood Seats. Stock and Storage Racks, Metal Shelving, Metal Vault Fixtures, Improved Soda Kettles, 40 and 60 gallons, Water Heaters and Instantaneous Mixers, Bubbling Drinking Fountains with or without Ice Coolers, Work Benches and Bench Legs, Drawing Stands, etc.

Manufacturing Equipment & Engineering Co.
136 Federal Street, Boston, Mass.
Works and Mail Address: Framingham, Mass.

Now Is The Time

To Get Busy on

Hot Water Heater Sales

The firing season is over and the gas water heater is in big demand everywhere.

You will find it easy to sell the

HOFFMAN
Instantaneous
Automatic Water Heater

and make a good profit on every sale. The economical service given by the Hoffman makes one home-owner recommend it to another.

Write for prices.

The Hoffman Heater Co.

Lorain, - Ohio

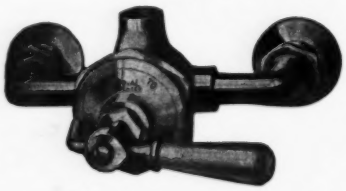
Branch Offices in All Large Cities

Simplified Construction

This means simplified operation and reduces wear to the minimum.

ROYAL

Patent



Shower Mixing Valve

has fewest working parts. No springs or cams to wear out. Regulating screw prevents water rising to scalding degree.

Substantially made of first grade red metal and will withstand hard usage usually required of a mixing valve.

Write for Catalog

THE ROYAL BRASS MFG. CO. CLEVELAND, OHIO

Minneapolis Master Plumber Heads Baseball Team.

Master plumbers throughout the country have excelled in many lines of endeavor, but it has remained for George K. Belden, of Belden, Porter & Gray, plumbers, fitters and electricians, of Minneapolis, to become the most prominent man in athletic circles in his locality. Mr. Belden is head of the Minneapolis Athletic Club and the Minneapolis American Association baseball team, and everyone in the trade is pulling for the team to win the pennant. Mr. Belden himself is quite an athlete and for five years was one of the Gopher football stars, while he also excelled as an all-round track man and tennis crack. He was twice single champion of the Northwestern Tennis Association and was one of Minnesota's two tennis stars to gain a ranking in the first ten tennis players in this country. He is a graduate of the University of Minnesota and is strong for amateur athletics.

St. Paul.

Recent permits for plumbing work on residences and other buildings include the following:

To P. E. Manteuffel, frame dwelling of Mrs. Haxton, 1529 Grantham Street.

To George Regelsberger, frame dwelling of M. Klassen, 294 St. Albans Street.

To James Synan, brick building, Dodge Motor Co., 118 West Seventh Street.

To Adolph Shetka, frame dwelling, 360 Goodhue Street.

To L. Sudheimer, brick dwelling of H. B. Fuller, Davern Avenue and Edgecumbe Road.

To John E. Holt, frame dwelling of W. J. Mitchell, 779 Summit Avenue.

To J. W. Martin, frame dwelling of Percy Vittum, 1064 Portland Avenue.

To T. J. Rozycki, frame dwelling of V. Sierakowski, 1142 Forest Street.

To O. Skog, frame dwelling at 559 Park Avenue.

To Paul F. Manteuffel, frame dwelling of Joe Johnson, 1692 Stamford Avenue.

To Fred A. Beier, frame dwelling of D. Carroll, 72 Kent Street.

To Mr. Beier, dwelling of Peter McWhirter, 824 Delaware Street.

St. Louis and Vicinity.

St. Louis plumbing and heating men are prepared to take a big part in the "Own Your Own Home" campaign, which will be launched about May 14th, according to present plans. Several meetings have been held at the St. Louis Chamber of Commerce for the purpose of completing plans. A monster conference will take place immediately preceding the drive. Housing conferences have been held for the purpose of preventing property from being run down and also to preserve neighborhood values. These conferences have been attended by property owners and tradesmen. The campaign will consist of community meetings, a large advertising drive and many other features.

One of the most encouraging signs of a bright future in construction in St. Louis is the fact that rents continue to maintain a high level. This is due to the deficiency in normal building. According to a recent report of the

Labor Department, the deficiency in building investment in Missouri is $55,000,000; in St. Louis, $20,284,971; and in East St. Louis, $77,184. The report shows that rents in this district have soared and that millions are being invested in construction.

A contract to build a $60,000 dwelling for Threon E. Catlin, in Brentmoor Park, has not been awarded, but plans are being drawn and sub-contracts will soon be asked.

It has been definitely settled that a complete new club house will be built by the Algonquin Golf Club at Berry Road and Algonquin Lane to replace the old building destroyed by fire a few months ago. Architects Klipstein & Rathmann, Chemical Building, are drawing plans for a $70,000 structure. F. O. Hale is president of the club and as far as can be learned, no building contractor has been selected for the work. The new club house will include a large locker room with a number of shower baths.

The Establishment of the Jos. F. Tumalty Plumbing Co., 1015 Chestnut Street, St. Louis, Mo.—The Gentleman at the Extreme Left Is Mr. Tumalty. The Others Are Some of His Employes.

The Dickie Construction Co., 915 Olive Street, has been awarded the general contract for a $45,000 residence to be erected at 5365 Kingsbury Place, for H. D. Gardner. Bids on sub-contracts, which will include the installation of a hot-water plant, will be asked soon.

Bids are being taken for sub-contracts on a $350,000 apartment building at Forth Worth, Texas, by G. A. Banister, the owner, Syndicate Trust Building, St. Louis. The structure will be five stories and will contain 200 rooms.

Although building during the month of April showed a large increase over the same month last year, Director of Public Safety McKelvey said there would be no appreciable increase in construction in St. Louis until the cost of labor and material is considerably reduced. At the same time manufacturers of building supplies maintain that there will be few reductions and contractors are at sea. Director McKelvey pointed out that due to the high costs of construction, a residence which before the war would have cost $6,000 to build, now costs $10,000. An office building today, he said, would cost 50 per cent more than before the war. Rents in an office building constructed today would have to be commensurated with the cost of construction and the builder would be unable to compete with the owners of buildings constructed before the war. Last month's figures show that 703 building permits were issued for improvements totaling $1,019,470. In April of last year 684 permits were issued for buildings which cost $530,028. The figures for previous years were:

Building Adjustment

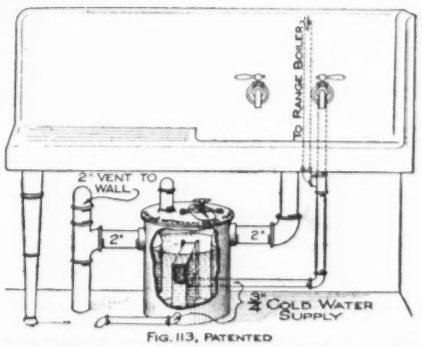


FIG. 113, PATENTED

Dehn's "AcmE" Double-Trapped Water Cooling Grease Trap properly installed.

An endless number of buildings thruout the United States should have the defective and inferior plumbing and drainage systems adjusted now.

The health of the occupants of the buildings in which these defective plumbing systems exist are jeopardized as long as these conditions exist.

The installation of modern sanitary appliance costs no more than keeping up the repair of the defective and inferior appliances. Install DEHN'S SANITARY SAFEGUARDS.

Modern Catalog containing schedule of capacities, furnished free on request.

1897 ***1919***

Compound Injector & Specialty Co.

Originators, Designers and Sole Manufacturers of Dehn's Sanitary Safeguards.

419-421 N. Laramie Ave., Chicago, Ill., U. S. A.

MAKING WATER RUN UP HILL

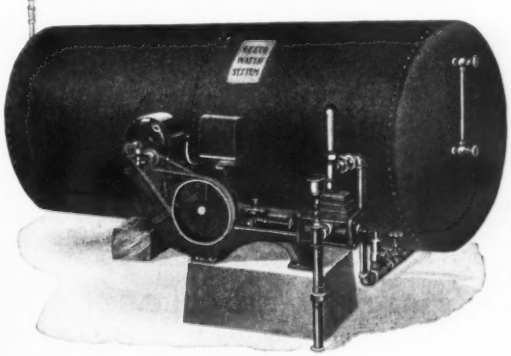
is easy when an up-to-date, automatic

REECO WATER SUPPLY SYSTEM

is installed. With a pressure of 50 pounds in the Reeco pneumatic tank, the water will "run up hill" to an elevation of about 117 feet.

Larger outfits for higher pressures when needed.

The Reeco "Little Giant" pump, with electric motor, automatic control, and Reeco pneumatic tank—a complete pressure system.



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Electric, Gasoline and Kerosene Pumpers.
Deep Well and Suction Pumps.
Hot Air Pumping Engines
Complete Pneumatic Tank Systems.

RIDER-ERICSSON ENGINE CO.

WALDEN, N. Y.

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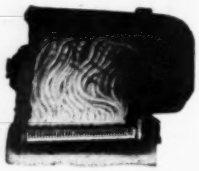
44 Drayton St., Savannah, Ga.

Bernhard Boilers



have greatest direct fire surface of any boiler of same rating. Flame passes across tubes in fire chamber and then travels the length of boiler through rear flues.

This is only **one** reason why Bernhard Boilers are better.

Write for Testimonial Booklet, "What the People Say," also new Catalog I.

KANAWHA MFG. COMPANY
175 W. Jackson Blvd., Chicago
101 Park Avenue, New York Charleston, West Virginia
Michigan Representative:
G. V. Hepburn, 25 Rochester Place, Grand Rapids, Mich.

"Farnsworth Equipped" Means Saving Coal

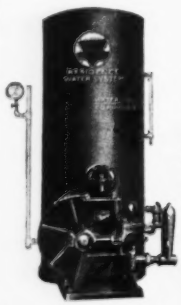
"The greatest coal saver ever offered the steam plant." This Farnsworth Duplex Boiler Feed Pump is the Master.

Mills here and abroad are speeding up production with this Coal-Saver.

This shows front view receiving and delivery check valves.

WRITE FOR CATALOG.
12 styles—25 systems.

FARNSWORTH CO., Conshohocken, Pa.
Engineers and Manufacturers of Condensation Pumps



Your Job

Thousands of home owners all over this country want

"DURO"

Residence Water Systems—they've got the money to pay for them and are just waiting for you to sell them.

That's Your Job

Write or wire for nearest representative.

Makers of "DURO" Guaranteed Residence Water Systems.

GUARANTEED DURO MADE BY THE BURNETT-LARSH MANUFACTURING CO. DAYTON OHIO

The Burnett-Larsh Manufacturing Co.
DAYTON :: :: :: OHIO

THE BRUNSWICK-BALKE-COLLENDER CO.
WHALE-BONE-ITE
CLOSET SEATS

THE EFFICIENT CLOSET SEAT

HEAVY COVERING ASSURES LIFE-LONG SERVICE — ACID - PROOF — IMPERVIOUS—STANDS ABUSE LIKE A BOWLING BALL — CONCEALED HINGES — INDISPUTABLE QUALITY

RECOMMEND THIS PROFIT MAKER

ASK YOUR JOBBER OR SEAT DEPT.

THE BRUNSWICK-BALKE-COLLENDER CO
623 SO. WABASH AVE. CHICAGO

April, 1917, permits for 733 buildings, $1,707,991; April, 1916, permits for 754 buildings, $1,003,145; April, 1915, permits for 981 buildings, $986,719; April, 1914, permits for 1,090 bildings, $1,734,412.

California

San Francisco and Vicinity.

Building activities are still on the increase in and about San Francisco, and business along plumbing and heating system lines continues to grow more brisk. Apartment houses, with large quantities of plumbing work and extensive heating systems, are furnishing the local trade with a satisfactory amount of work, and it is the opinion of those connected with the plumbing, heating and ventilating lines, that the tide has turned toward a normal resumption of business that will become apparent within the next few months. Realty transactions are becoming more active each week, and any number of plans is ready in the architects' and contractors' offices, which will be carried out in the near future.

Livingston Bros. have announced their intention of starting immediately on a new addition to the Grant Avenue shop. The structure, a six-story building, will be erected on the adjoining Whittell property with a 40-ft. frontage on Geary Street. The company plans to spend about $200,000 for the building, adding 40,000 sq. ft. to the establishment. The most modern heating and plumbing systems will be installed.

Figures are now being taken for the construction of a five-story and basement brick apartment house which is to be erected on the northeast corner of Sutter and Mason Streets, at a cost of $70,000.

Architects Rousseau & Rousseau, 110 Sutter Street, are working on plans for the proposed six-story apartment house, which is to be built at Rush and Monroe Streets by the Gerard Investment Co.

A thirteen-story office building is to be erected at the corner of Post and Powell Streets in the near future by William M. Fitzhugh.

Other Cities in the State.

Architects Chester Miller and Carl Warnecke, of Oakland, are preparing plans for a summer hotel including garage, water tank, swimming pool, tennis court, etc., which will be erected in Alameda county by Chas. Gross, within the next few months.

The industrial building of the Y. M. C. A. of Vallejo is to be erected immediately at Sonoma and Capitol Streets. The building will contain accommodations for a great number of workers at the Navy Yards.

The lowest bid for the erection of the new Wasco school building at Bakersfield was that of Henry Eisslerof, who gave the figures of $65,000. The school is to be a one-story mission style structure. It is understood that the contract will go to Eisslerof.

A modern five-story brick and steel office building is to be erected at 11th and I Streets, Modesto, by the Modesto Moose Lodge, at an approximate cost of $150,000.

Bids have been closed for the construction of a one-story frame gymnasium building for the Rio Vista High School. Henry C. Smith, San Francisco, is the architect The plans include modern showers, etc.

The City of Eureka School District has awarded the contract for the construction of a two-story concrete school building to Louis Halversen of that city. The contract price is $27,447.

COMMENT ON ANTI-SIPHON TRAP TESTS MADE FOR HOUSING CORPORATION AT BRIDGEPORT, CONN.

(Continued from Page 243.)

unsealed traps into the rooms. The writer has made some interesting tests in connection with tall buildings and has invariably found alternating air currents in some vent or soil stack through the roof, namely: an inrush of air at fairly high speed for a few minutes, to be followed by an equally rapid outrush of air through the same pipe. When, under normal working conditions, the air current through a 4-inch vent pipe attains a speed of approximately 3,000 ft. a minute, it is at once apparent that trap seals are under a severe strain, and something is wrong with the design or installation.

Experience teaches us that our vent pipes are usually too small, even under the requirements of our present plumbing ordinances in Chicago, which are considered rather excessive in their requirements. It has been suggested that the introduction of venting in plumbing systems was brought about by a merchant plumber who had sufficient business acumen to guarantee his work. He would refuse absolutely to guarantee the efficient working of any plumbing system, which did not have vents extended through the roof to insure the maintenance of the trap seals.

Fouling.

There is another side to this question which has been briefly mentioned by the committee, namely fouling of traps and waste pipes. Here again bitter experience has taught us that greasy or soapy waste very soon foul the interior of a trap which has an enlarged body or intricate passages and, by reason of its fouling, soon loses whatever merit it may have as an anti-siphon trap. We know that the simpler forms as, for instance, the S. and P. traps, have good scouring qualities and consequently are free from fouling. They are also the cheapest type of trap made and, even with vents to protect their trap seals, may be installed at a cost about equal to that for the higher grades of anti-siphon traps with vents omitted. In looking at the detail of the traps used in Bridgeport, we are led to believe that Fig. 2 is meant to be a type of anti-siphon trap for lavatories and sinks. It may have better scouring qualities than are apparent from the illustration, but, taking the illustration for what it appears to be, we know from past experiences that this trap would soon foul to such an extent that, in the course of a few months, it would be nothing more or less than a common P trap having no better anti-siphon qualities than are to be obtained in a common P trap with the same depth of seal.

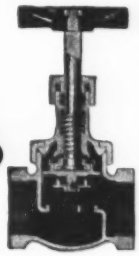
Economy.

As a matter of economy in installation, we find in comparing drawing of G-2 type of building with an installation of the same character with vents and revents for each fixture, that the latter may be installed with proper revents and have from one to three less joints than under the system shown in type G-2. We have, therefore, two systems which may be installed at approximately the same cost, and the margin of safety in that without the revents is less than will be obtained in a system having revents, because in the latter provision is made to protect the trap seals not only from siphonage, but also from back pressure.

The committee recommends the installation of a relief vent to protect the system against back pressure. It also believes that the system requiring this relief vent will be reasonably safe for a limited number of years.

It would seem more advisable to install a system in the first place which would be reasonably safe for as long as the

MARSH
UNION BONNET
DOUBLE SEAT
VALVES



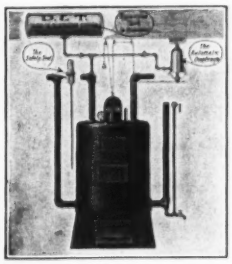
While we furnish a full line of high pressure Mill Supply Globe, Angle, and Gate Valves, we Specialize on High Grade Radiator Valves, and manufacture the Largest Line of any company in this, or any other country.

ALL STYLES AND SIZES

Let us send you catalogue showing line complete and quote prices on your requirements.

MARSH VALVE CO. - - Erie, Pa.

D & T Tank-in-Basement System
Saves 25% on Coal Bills



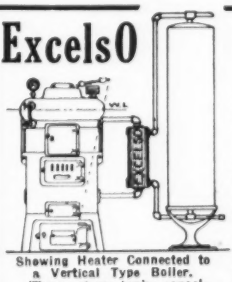
It is the most economical and efficient method of Hot Water Heating known. It will save your client money on the purchase of equipment, the installation and up-keep.

Over 35,000 D. & T. systems now in use.

Write for Booklet "Progress in Hot Water Heating."

D&T Manufacturing Co.
1907-09 Pine Street
St. Louis, Mo.

ExcelsO Water Heater



Showing Heater Connected to a Vertical Type Boiler.

Three sizes—tank capacities, 40, 70 and 100 gals. for use below water line. Heats storage tanks up to 800 gals. with live steam.

The simplest, most advanced and economical method of heating domestic water.

The ExcelsO Heater is a one-piece casting with two separate chambers, one inside the other. Water from boiler circulates through inner chamber and heats domestic water circulating through outer chamber. No coils to interfere with fire. Easily connected to any steam or vapor boiler—new or old. Good profits for plumber.

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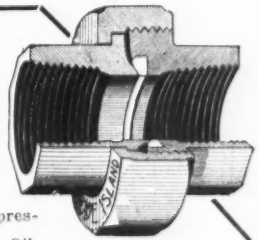
EXCELSO SPECIALTY WORKS
601 WHITE BUILDING BUFFALO, NEW YORK

Rhode Island Union



Positive Joint
Bronze Seat
No Packing
No Gasket

Guaranteed 300 lbs. working pressure.
For Steam, Water, Gas and Oil.
The best is cheapest in the end—use the

RHODE ISLAND

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RHODE ISLAND FITTINGS COMPANY
HILLS GROVE, R. I.

The Milwaukee Mixer

Anti-Scalding
Leak-Proof

Accessible
Durable

No Cams
Made to suit all conditions

No Springs
Order from your jobber

Fig. C-15

The Milwaukee Flush Valve Co.
MILWAUKEE, WISCONSIN
Specialists in the Manufacture of Valves

HAYNES SELLING COMPANY

Heating Specialists

Modulated and Vacuum Heating Systems Adapted for all Types of Buildings

Over 25 Years' Experience

1711 Sansom Street Philadelphia, Pa.

Y-T
ROOF FLASHER

Makes a water-tight joint and a perfect fit. When slipped over soil pipe, can be calked as absolutely tight as if poured in place. Flasher has patented cast iron caulking base.

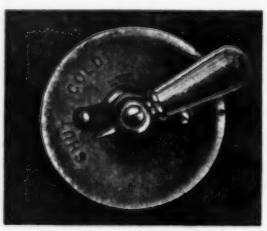
Furnished in all sizes from 1¼ to 6-in. for angle and flat roofs.

Write for folder.

The Yoder-Thomas Mfg. Co.
1024 B. of L. E. Bldg.
CLEVELAND, OHIO

NIEDECKEN MIXER

For
Shower
Lavatory
Bath
Sink
Etc.



Write for Bulletin D-10-X

HOFFMANN & BILLINGS MFG. CO.
MILWAUKEE

material in the pipe lasted, than to install one which is limited to its life, when the cost of the two systems is approximately the same. Sure the business man would rather pay a small matter of 5 to 10 per cent more, that his margin of safety might be secure, than to sacrifice it for the sake of such a small amount of money on his first cost.

We do not believe that the report of tests, as outlined, has proved that vents and re-vents in plumbing systems may be dispensed with, if a margin of safety is to be maintained.

THEATRE VENTILATION FROM A HEALTH AND BUSINESS STANDPOINT.

(Continued from Page 239.)

owners at least, to the benefit to be derived. However, in spite of this, after the installation of a satisfactory ventilating system, the owners and managers of theatres in the great majority of cases testified voluntarily as to the improvement not only in the conditions of the theatre, but as to the increase in patronage and improvement in their financial condition. At the present time this is clearly recognized.

The education respecting good air conditions has spread generally to the public. They will not patronize an unsanitary or improperly ventilated theatre. Even the non-operation of the equipment over short periods of time, due to burned out motors or other mechanical difficulties, results in a serious loss to the owners not only at the time but for some time subsequent to the accident, and extreme care is now exercised by the management to prevent situations of this kind.

The ventilation ordinance which was considered drastic in 1912 is at the present time inadequate and falls far short of the requirements that could be imposed to the entire satisfaction of the theatre owners of Chicago. The recognition is universal that a sanitary, clean, well ventilated theatre is the only good business investment.

Norfolk, Va.—M. A. Williams, 260 Bank Street, has been awarded the contract to install plumbing and heating systems in a $50,000 bank at Granby Street and City Hall Avenue.

Cleveland, O.—Haskell-George Co., 1148 Prospect Avenue, has been awarded the contract to install plumbing systems in three $30,000 apartment buildings to be erected on Hampshire Road, Cleveland Height.

Rochester, N. Y.—William Brown, 18 Monroe Street, has been awarded the contracts for the installation of plumbing and heating systems in a public garage to be built at 39 South Union Street, at a cost of $30,000.

New York, N. Y.—The Globe Automatic Sprinkler Co., 149 Broadway, has secured the contract to install heating and plumbing systems in a $104,000 building to be erected at Indian Head, Md., by the United States Government.

Bloomington, Ill.—The Amercan Foundry & Furnace Co. has secured the contract for the installation of the heating system in a $24,000 school in Buda, Ill. Dooley & Brunnings, of Peoria, will install the plumbing system.

Atlantic City, N. J.—J. J. Nesbit, 213 North Vermont Street, has been awarded the contract to install the heating system in a $20,000 school to be built in Wilson Township near Easton, Pa. F. Ricker, of Easton, will install the plumbing system.

Richmond, Va.—L. M. Cheathan, 904 West Main Street, has secured the contract to install the heating system in a $50,000 apartment building on Grove Avenue and West Lombardy Street. S. G. Harriss will install the plumbing system.

SOMETHING ABOUT BACK-VENTING PLUMBING FIXTURES IN LARGE TOILET ROOMS.

(Continued from Page 242.)

The waste pipe, into which the traps discharge, is higher at the vent stack end than at the soil stack end, and if the principle illustrated in Fig. 3 is to be carried out here, will not the traps appear rather strange?

The distance from trap at one end of lavatory range to that at the opposite end is about 9 feet. The pitch in the waste pipe should be 1 in 20. That means practically a 6-inch pitch in the length of the lavatories between end traps. If it is permissible to install the system so that the traps connect to the fixtures inclined as in Fig. 5, then anti-siphon traps may be used to advantage. If, however, there is no objection to the line of traps pitching down as shown in Fig. 5, then ordinary round pipe P traps to wall may be used.

If the waste line must run under the floor, as in a case

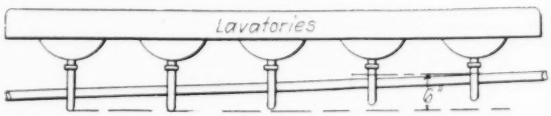


Fig. 5.

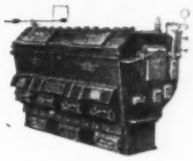
where there is no shaft or hollow wall behind the range, and if continuous loop venting is called for then anti-siphon traps must be used.

If, however, each fixture branch is separately back-vented all doubts regarding traps, trapping and ventilation are removed. There are many places, where some back vents could have been eliminated with perfect safety, but there are others, where to eliminate them would be unsafe and unsanitary. Loop or continuous venting is a cheap way of doing work. In many cases it is O. K., but there is danger in its general application.

In Fig. 2 the water risers also are run in the shaft. A cold water riser, C. W., an ice water riser, I. W., a hot water riser, H. W., all run up at the left hand end of shaft. At the right end of shaft and near the vent stacks is the hot water return riser, H. W. R., and the ice water return riser, I. W. R.

The cold water riser, of course, has no return. It just rises in the shaft and gives off branches to supply cold water to all closets, urinals and lavatories. The cold supply runs over to flush valves at closets, via the false ceiling space as shown. The cold, hot and ice water headers, which supply the other fixtures, are run along inner face of pipe shaft. Each fixture branch has a valve in pipe shaft. Main branch to closets also has a valve in pipe shaft. The continuous or loop system, which has been so extensively employed in the drainage portion of this job, is also worked in on the water distribution system. The flow risers on one side of shaft and the return risers at the other side are joined on each floor by cross pipes, from which the short branches to the fixtures are taken. This simplifies construction and insures positive circulation.

Now, we think, we have covered this job quite thoroughly except perhaps the slop sink. Its treatment will depend on whether or not the ventilation flues are to remain there. If they do then the waste vent, hot, cold and return risers may all run up inside the flues or inside the janitor's supply closet. The slop sink then would be set with its back against the flue wall and all pipes would go directly into the flue, or cross over to the supply closet. Of course, the hot and cold supply pipes to

ECONOMY  EFFICIENCY

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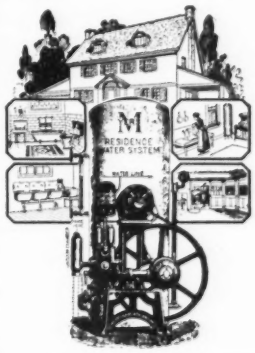

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slop sink could be run through false ceiling space so that slop sink would be supplied direct from risers in shaft. And the slop sink waste also could be run to shaft soil stack, but a back vent from slop sink would be necessary and this would have to run inside the ventilation flue, so why not run all slop sink risers inside the flue at the same time? That is the way the writer would be inclined to do this job.

THE PRINCIPLES OF REFRIGERATION.

(Continued from Page 245.)

is more common. When the brine system is used, the limit is usually placed at 600 feet. The amount of pipe surface per cubic ft. of space to be cooled will depend upon the work to be done and the system employed.

For direct expansion coils we may assume the following for average conditions:

Class of work.	Sq. ft. of cooling surface per 100 cu. ft. of space.
Freezing chambers	35
Storage rooms	12

For the brine system, multiply these figures by 15. These apply to general conditions, the actual amount of course varies with the construction of the cold room, the

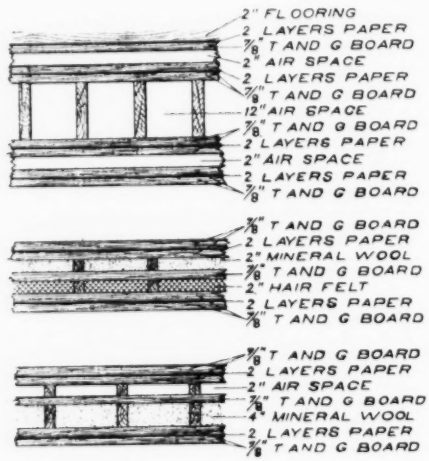

Fig. 16.

frequency with which the doors are opened, the class of goods to be cooled, and the time allowed for cooling.

Data for any special conditions can be obtained from manufacturers of refrigerating apparatus as well as detailed plans for the erection of their equipment.

The location of the cooling pipes in a freezing or storage compartment is an important detail. As the weight of air increases, as its temperature is lowered, it is evident that the coils should be placed in the upper part of the room in order that the colder air will fall toward the floor and thus set up a circulation. One method is shown in Fig. 13, that at the right being preferable, while in another arrangement the pipes are carried along the walls, well up toward the ceiling, and set out sufficiently to allow a proper air circulation around them. This is sometimes increased by placing baffles in front of the coils, with sufficient space at the top for the warm air to enter, thus producing a flue effect. The action of this is the reverse of that obtained in ordinary ventilation in connection with heating systems, as the air in this case flows downward over the coils instead of upward.

Another arrangment, sometimes called the "bunker system" is shown in Fig. 14. In this case the cooling surface is made up in the form of a large stack similar to a hot blast heater, and the air drawn or forced over it either by means of a fan or by gravity circulation. An arrangement of this kind employing a fan is shown in the illustration.

Insulation.

Proper insulation is another detail which must be given careful consideration, for after the compartment and its contents are once chilled, it is only necessary to remove such heat as finds its way through the walls; therefore, the rate of transmission has a direct bearing upon the cost of refrigeration. Typical methods of insulation for cold rooms are shown in Figs 15, 16 and 17, which are for wall, ceiling and floor, respectively. Other forms of construction are used, but these serve to show the general methods to be followed. All ammonia and brine piping outside the space to be cooled should be insulated with special sectional covering.

May 12, 13 and 14, 1919.—The annual meeting of the National Pipe and Supplies Association, at Pittsburgh, Pa., with headquarters at the William Penn Hotel.

May 13 and 14, 1919.—The annual convention of the Georgia State Association of Master Plumbers, at Columbus, Ga.

May 14, 1919.—The annual convention of the Connecticut State Association of Master Plumbers, at New Haven.

May 14 and 15, 1919.—The annual convention of the North Carolina Association of Master Plumbers, at Greensboro, N. C.

May 15, 1919.—The annual convention of the Tennessee Master Plumbers' Association, at Nashville, Tenn.

May 19 and 20, 1919.—The annual convention of the Kentucky Master Plumbers' Association, at Lexington, Ky.

May 20 and 21, 1919.—The twenty-fifth annual convention of the Pennsylvania State Association of Master Plumbers, in Williamsport, Pa.

June 2, 3 and 4, 1919.—The annual convention of the California State Association of Master Plumbers, at Los Angeles, Calif.

June 10, 11 and 12, 1919.—The semi-annual meeting of the American Society of Heating and Ventilating Engineers, at Pittsburgh, Pa.

June 11, 1919.—The summer meeting of the Central Supply Association, in Chicago, with headquarters at the Hotel Sherman.

June 11, 1919.—The summer meeting of the Eastern Supply Association, in New York City, with headquarters at the Hotel Astor.

June 12, 13 and 14, 1919.—The annual convention of the Heating & Piping Contractors' National Association, at Atlantic City, N. J., with headquarters at the St. Charles Hotel.

June 16, 1919.—The annual convention of the New Jersey State Association of Master Plumbers, at Atlantic City, N. J.

June 17, 18 and 19, 1919.—The annual convention of the National Association of Master Plumbers, in Atlantic City, N. J. The headquarters of the convention will be at the Hotel Breakers.

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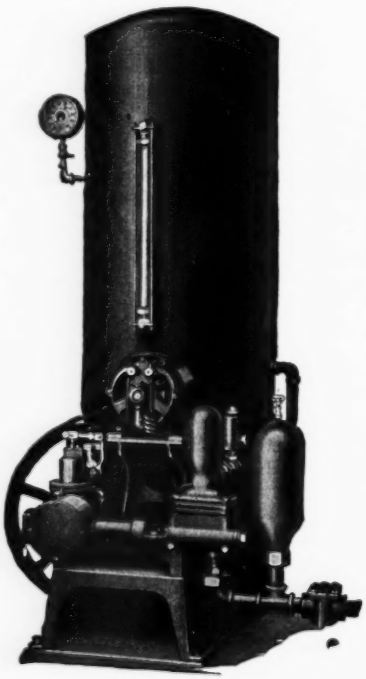

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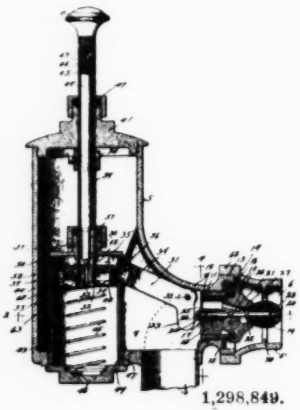
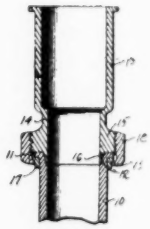
Patents

Plumbing Department.

1,298,849. Flushing Device. Franklin J. Wolff, Chicago, Ill., assignor to L. Wolff Manufacturing Company, Chicago, Ill., a Corporation of Illinois. A flushing valve comprising: a single chamber casing having inlet and outlet openings, and open at its top and bottom, a valve for closing one of said openings, a lever disposed within the casing for operating said valve, closures for the open top and bottom of said casing, one of said closures carrying a retarding device within the casing, said retarding device being connected with said lever and for delaying the closing action of said valve.



1,298,849.



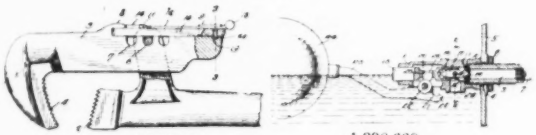
1,298,687

1,298,687. Pipe-Coupling. Val F. Franck, Louisville, Ky. In a pipe coupling, the combination of a soft metal pipe having an annular flange extending outwardly at right angles thereto, the inner portion of said pipe being beveled outwardly contiguous to the base of said flange, a ferrule including a neck having an enlarged externally threaded portion thereon, said neck projecting beyond said enlarged portion and being externally beveled to be reduced toward its end, said neck being engaged with the beveled portion of said pipe, whereupon said flange will bear upon said enlarged portion and terminate slightly short of the threaded portion of said enlarged portion, a hard metal bearing ring having an outwardly extending flange on one end engaging the flange of the soft metal pipe, a collar having threads formed internally and terminating short of one end thereof thus having a slight unobstructed inner surface, a rib formed on said collar at the outer end of the unobstructed surface, said rib engaging said ring, while said collar is being screwed into engagement with the enlarged threaded portion of said neck, thus drawing said ring toward the enlarged threaded portion whereby the ring will be drawn nearer to the beveled surface of said neck to tightly jam the soft metal of said pipe and flange along the beveled portion of said neck, while excess metal of said flange of the soft metal pipe may pass toward the unobstructed surface of said collar thus forming a liquid tight joint.

Heating Department.

1,298,663. Pipe Wrench. Joseph Francis Chevalier, Lakeland, Ky. A wrench comprising a handle having a jaw; a pivot element carried by the handle; an auxiliary member having a jaw coöperating with the jaw of the handle and

provided in one edge with seats in any one of which said pivot element may be mounted; a slide mounted for right line reciprocation on the auxiliary member and bridging the seats to hold the pivot element therein; and means for securing the slide releasably against retraction.



1,298,663. 1,298,668.

1,298,668. Valve. William E. Coakley, Cleveland, Ohio, assignor to The Ohio Blower Company, Cleveland, Ohio, a corporation of Ohio. A valve comprising, in combination, a casing having a bore and a valve seat disposed at one end thereof, a member movable within the bore toward and from the valve seat, the end of said member adjacent the valve seat having a recess, a cylindrical valve plug fitting loosely within the recess and having its opposite ends correspondingly tapered inward from the diameter of the plug, the valve plug and member having aliming apertures, a pin fitting loosely within said apertures and retained therein by the wall of the bore, a pivotal member carried by the casing, and an actuating member removably carried thereby and having a portion extending into the casing for inter-engagement with the aforesaid member thereby to actuate the member and retain the same against withdrawal from the bore.

CONTRACTS AWARDED.

Topeka, Kans.—George W. Sutherin will install heating and plumbing systems in the $35,000 Rural High School to be built in Meriden, Kans.

Bloomington, Ill.—The American Heating & Furnace Co. has been awarded the contract to install the heating system in a $31,000 school at Peoria, Ill.

Rembrandt, Ia.—Thomas Reinhardt will install plumbing and heating systems in the $65,000 Consolidated School in course of construction in this city.

Aurora, Ill.—Clarence Ruddy, 94 South La Salle Street, has been awarded the contract to install the plumbing system in a $25,000 creamery and bottling plant.

Norfolk, Nebr.—E. L. Rodwell has secured the contract for the installation of plumbing and heating systems in a $70,000 school to be erected in Fairfax, S. D.

Denver, Colo.—Wallace Plumbing Co., 1509 Tremont Place, has been awarded the contract to install the heating system in a $100,000 school to be built at Ordway, Colo.

Baltimore, Md.—The Heating & Power Corporation has been awarded the contract to install the plumbing system in the Midland Packing Co.'s packing plant to be built in Sioux City.

Scotch Plains, N. J.—S. B. McCoy has been awarded the contract for the installation of plumbing in the $25,000 country clubhouse of the Shackamaxon Country Club of Westfield, N. J.

Janesville, Wis.—M. Snyder has secured the contract to install plumbing systems in one hundred and ten residences and bungalows to be erected in Janesville for Matteson & Lindstrom Co.

Great Bend, Kans.—Fred Richardson has secured the contract to install plumbing and heating systems in the $50,000 building for the First National Bank and in a $15,000 office building for the Prudential Building & Loan Association.

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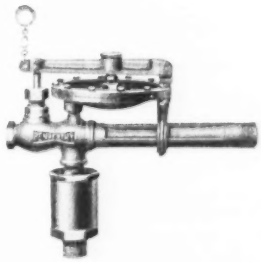

The prime function of this generator is to pull the air from the heating system. The result is that EVERY RADIATOR IS INSTANTLY FILLED WITH STEAM and valves on outlet end close automatically, HOLDING STEAM IN RADIATORS.

Being semi-automatic, the maintenance cost is negligible. When more heat is desired, turn it on by pulling chain which can be run up through floor to a convenient location. Shuts off automatically. No motors or complicated mechanism to require constant attention. Discharges foul air into sewer. Eliminates water hammer in radiators. Can be operated wherever city pressure water is available.

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WANTED—YOUNG MAN EXPERIenced in sales department work for office position in Sales Department of prominent manufacturer of Brass Valves. One familiar with standard brass valves and their use preferred. State age, experience and where obtained, and salary desired. Address 2647, care "Domestic Engineering," Chicago. 5-3; 10

WANTED—SALESMAN, PLUMBER OR steamfitter who can invest $5,000 in established heating specialty company. Positions to represent the company in the following territories are open: Wilkes-Barre, Pa., Pittsburgh, Pa., Buffalo, N. Y., Chicago, Ill., Detroit, Mich., New York City. Good salary to start. Do not answer unless you can make the investment. Address 2623, care "Domestic Engineering," Chicago. 3-22 tf.

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A-1 PLUMBER AND FITTER WANTS steady position. Would buy interest in good shop. Address 2644, care "Domestic Engineering," Chicago. 4-26; 5-3

POSITION WANTED—PLUMBER WITH five years' experience, in possession of Wisconsin State Journeyman license and union card, seeks employment with reliable firm in state. Address 2648, care "Domestic Engineering," Chicago. 5-10

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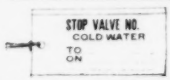

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Government Proposals

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., April 30, 1919.—Sealed proposals will be opened in this office at 3 p. m., May 28, 1919, for Men's Shower Room, etc., at the United States Post Office and Court House, Detroit, Michigan, in accordance with specifications, copies of which may be had at this office or at the office of the Custodian, Detroit, Michigan, in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect. 5-10; 17

PROPOSALS FOR INDIAN SUPPLIES: Department of the Interi ', Office of Indian Affairs, Washington, D. C., April 25, 1919. Sealed proposals, plainly marked on the outside of the sealed envelope: "Proposal for Hardware" (or other class of supplies as the case may be) and addressed to the "Commissioner of Indian Affairs, 310 Elm Street, St. Louis, Mo.," will be received until 10 o'clock a. m., on each of the following dates and on the class of supplies specified, and then opened: Hardware, June 2, 1919, Furniture, May 27, 1919; Clothing and Piece Goods, May 31, 1919; Harness, Leather, etc., May 29, 1919; Tinware, Stoves, etc., May 26, 1919; Shoes, Overshoes, etc., May 26, 1919; Paints, Oils, etc., May 31, 1919; Medical Supplies, June 2, 1919; Carbide, etc., May 29, 1919. Schedules covering all necessary information for bidders will be furnished upon application to the Indian Office, Washington, D. C., and to the U. S. Indian Warehouses at Chicago, St. Louis and San Francisco. The Department reserves the right to reject any or all bids or any part of any bid, and to post tentative awards promptly, subject to correction. CATO SELLS, Commissioner. 5-3;10

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